

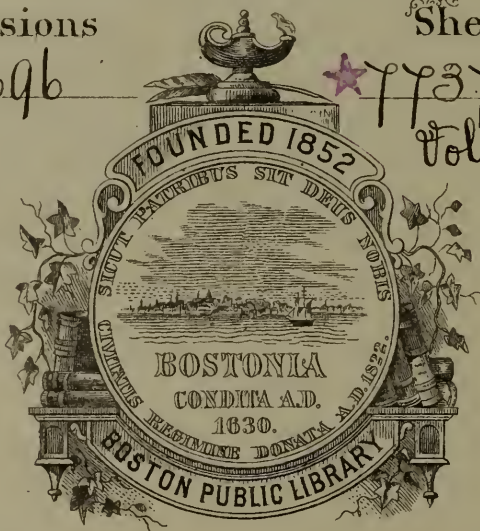
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PUBLICATIONS

OF THE

MASSACHUSETTS MEDICAL SOCIETY.

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History & Statistics of Ovariectomy;

A PRIZE ESSAY.

BY GEORGE H. LYMAN, M.D.,

OF BOSTON

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PRIZE ESSAY.

THE

HISTORY AND STATISTICS OF OVARIOTOMY,

AND THE

CIRCUMSTANCES UNDER WHICH THE OPERATION MAY BE REGARDED
AS SAFE AND EXPEDIENT.

“Hydrops ovariorum ut plurimum steriles annosasque mulieres occupat, difficulter cognoscitur et vix sine inciso cadavere.” — BOERHAAVE, Aph. 1223.

BY GEORGE H. LYMAN. M.D.,

OF BOSTON.

P. H.
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Extracts from the Records
OF
THE MASSACHUSETTS MEDICAL SOCIETY.

At a Meeting of the Society, June 11, 1855,—

The Corresponding Secretary announced, that, through the liberality of one of its Fellows, the Massachusetts Medical Society is authorized to offer the sum of One Hundred Dollars to the author of a Dissertation which may be adjudged worthy of a prize by a Committee appointed by the Councillors of the Society, on the following subject, viz.: "The History and Statistics of Ovariectomy, and under what Circumstances the Operation may be regarded as safe and expedient."

At a Meeting of the Councillors, Oct. 3, 1855, the following gentlemen were appointed the Prize Committee, viz.:—

Dr. SOLOMON D. TOWNSEND.

Dr. SAMUEL CABOT.

Dr. AUGUSTUS A. GOULD.

Dr. CHARLES E. WARE.

Dr. BENJAMIN E. COTTING.

At the Annual Meeting of the Society, May 28, 1856,—

Dr. TOWNSEND, Chairman of the Prize Committee, reported that the Committee had unanimously agreed upon the Dissertation considered worthy of the prize, and handed to the President the envelope bearing the motto of the Dissertation. On breaking the seal, the author was found to be Dr. GEORGE H. LYMAN, of Boston.

DISSERTATION.

IN tracing the History of Ovariectomy, we find that extensive incisions into the abdominal parietes, similar to those employed in modern times for the removal of diseased ovaria, were known to the ancient Jews, who, according to Dr. Mansfeld, of Brunswick,¹ operated in this way for removal of the uterus; and the statement by Morand,² on the authority of Heyschius, that Gyges and Andramites, kings of Lydia, were in the practice of qualifying certain of their unfortunate female subjects for the duties of eunuchs, by removing or destroying their ovaries, is constantly repeated by more recent authors. This practice, it seems, is still continued in certain parts of India. Dr. Roberts says, "that, in 1841, he examined three female eunuchs, called Hedjera, in whom the atrophy of the ovaries was effected by puncturing them with needles, impregnated with some unripe vegetable juice."³

In more recent times, however, abdominal section for the removal of the uterus or its contents, for extra-uterine pregnancy, for intussusception, tumors, &c., appears to have been first revived in the sixteenth century. In "Sue's *Histoires des Accouchements*, Paris, 1786," is an account of successful

¹ Edin. Med. and Surg. Jour. vol. xxv. 1826.

² Mémoires de l'Acad. de Chirurg. t. ii. p. 319.

³ Tilt, Dis. of Women, Lond. 1853, p. 27.

cases of extirpation of the uterus by Andreas à Cruce, of Venice, in 1650; by Carpus, in 1640; and by Zacutus Lusitanus, also early in the seventeenth century;¹ and Morand, above cited, says that this operation (extirpation of the ovaries) “n’a point paru une chimère à Felix Platerus et à Diemerbroeck.” “Frankenau en avait vu une faite par hasard à la suite d’une plaie au ventre réussir.”

In the early part of the eighteenth century, the subject was discussed by a great number of authors, — Morgagni, Payer, De Haen, Targioni, Lieutaud, &c.; and though a few isolated cases are reported, some if not all of them accidental, as herniæ, &c., it may with propriety be assumed, that, as an established operation, it dates no earlier than the commencement of the present century.

Boivin and Duges say that it was first recommended by Vanderhaar, but give no authority for the statement.

Morand² gives De la Porte the credit of having first dared to propose extirpation.

Dr. Tilt³ says that Auguste Bérard was the first to perform the operation in France, at La Pitié; the patient dying in three days.

The earliest operative procedure for the cure of ovarian dropsy, of which I have been able to find any detailed account, is that of Dr. Houston, in 1701, mentioned hereafter (p. 11). L’Aumonier’s case, published at the close of the last century, has usually been reckoned as the first successful one; and although Wierus’s oft-repeated case of the gelder who operated upon his own daughter from suspicions of her chastity, the cases of Cyprianus⁴ and M. Kapeler, and the cure of Madame de Choiseul, are said to be authentic by Velpeau⁵ and others, the first operations for entire removal of

¹ Edin. Med. and Surg. Jour. 1825.

² Loc. cit.

³ Lancet, vol. ii. 1848, p. 420.

⁴ Morgagni, Epist. xxxviii. art. 69.

⁵ Dict. de Méd. art. Ovaires. Velpeau also alludes to its having been performed by Lafise, Lemman, and Delpech; and in *Revue Médicale*, 1844, t. ii., he says that Huder practised this operation as early as 1722, and other surgeons in 1731, 1751, and 1752.

the diseased ovary, recorded with any detail, were, next to L'Aumonier's above mentioned, those of McDowell, of Kentucky, in 1809, and Mr. Lizars, of Edinburgh, in 1823; and, in these cases, the modern history of Ovariectomy may be considered to have originated.

These last cases gave rise to a most animated discussion, which has not yet ceased, and which has been pursued with so much of personal feeling as to render it difficult for the impartial inquirer to arrive at the truth, among so many contradictory statements of reported facts. It has been productive of good, however, by attracting the attention of unbiased observers to the subject of ovarian disease generally, and adding to our knowledge of its pathology and diagnosis. When we read of distinguished surgeons dividing the abdominal parietes to the extent of a foot or more, in search of ovarian disease which had no existence, — an error of which I shall give repeated instances, — it will be readily conceded that any addition to our means of diagnosis is worth all the discussion which has taken place.

Before we can decide upon the necessity of extirpation as a remedy for ovarian dropsy, it would seem to be necessary to review the other modes of treatment or operation which have been proposed and adopted. I shall first state these, giving such illustrative cases as I may have met with in my search for cases of Ovariectomy; and I trust that this plan will not be considered as a departure from our more immediate subject, inasmuch as all well-authenticated cases, whatever may have been the particular method of treatment employed, will give more or less information, having a direct bearing upon Ovariectomy itself, in relation to its necessity at all, the diagnosis, &c.

MEDICAL TREATMENT.

This has been of every variety, with the hope of either permanent cure, or an arrest of its progress, and prolonga-

tion of life. Emetics, purgatives, mercurials, tonics, leeches, fomentations, blisters, electricity, friction, percussion, pressure, have each and all had their advocates; but, to show the small amount of real permanent benefit which has resulted from them, it will be necessary only to state a few of the opinions of recognized authorities.

Dewees¹ says, that, unless in acute inflammation of the cyst, "no one instance with which we are acquainted would lead us to the conclusion that any remedy has removed a disordered condition of these parts. . . . They seem to be so far removed from the general sympathies of the system, so insulated in position, so independent in function, that the common agents for the control of disease seem to waste themselves in unavailing attempts to influence their actions. . . . Who flatters himself that he has removed a dropsy, resolved a schirrous, or interrupted a suppuration, in these bodies? We believe, if he be candid, none will declare he has."

Grisolle² says, "On a vainement employé contre cette maladie tous les moyens préconisés contre les hydropisies. . . . Témoin d'un grand nombre d'insuccès et bien convaincu de l'impuissance de l'art et des dangers de toutes les médications actives qui ont été conseillées, nous croyons que tout médecin prudent ne doit recourir qu'à un traitement palliatif."

Sir Astley Cooper³ says, "Medicine has but little influence." He recommends pressure by a belt to retard its growth.

Lassus⁴ says, "Cette maladie est absolument incurable."

Watson⁵ says, "My position, as physician to a hospital, has brought under my notice several cases at an early period of development. . . . I have treated such cases assiduously with the remedies of chronic inflammation, frequent topical bleedings, and the use of mercury until the gums were affected, with the remedies of ordinary dropsy diuretics and

¹ On Females, p. 255. ² Pathologie Interne. t. ii. p. 399. ³ Lond. 1836, p. 450.

⁴ Pathol. Chir. t. ii. 1809, p. 283. ⁵ Practice, &c. vol. ii. p. 375.

drastic purgatives, and with remedies accounted specific, — the liquor potassæ, the various preparations of iodine; and I must honestly confess that I am unable to reckon one single instance of success.”

Simpson¹ says, “The interior of an ovarian cyst has no power whatever of absorption; and, consequently, no diuretics or de-obstruents of any kind have any therapeutic influence on the reduction of an ovarian tumor by the removal of its fluid contents by the tissues of the tumor itself; and on page 265 he adds, that he would “almost as soon believe that the head could be absorbed and removed by medicine.”

Blundell² says, “Dropsy of the ovary cannot be cured, in general, by diuretics, cathartics, emetics, mercurial action, or the like;” and recommends caution in their use, “lest you leave the patient in a worse condition than you found her.” And on page 827, “It is said that ovarian dropsy has been known to disappear after electrification. In so forlorn a case, the remedy may be worth a trial; but my faith is weak.”

Velpeau³ says of internal medicines, “Peut on compter un seul succès avéré, obtenu par l'emploi d'un de ces moyens?”

Denman⁴ says, that, when the disease has made a certain progress, no treatment has any effect in removing it or preventing its increase.

Burns⁵ says of diuretics, “My opinion is, that they have no more influence on it than they have over a mellicerous tumor on the shoulder.”

William Hunter⁶ says, “If I may form a judgment from what I have seen both in the living and dead body, I should believe it to be an incurable disease, and that the patient will have the best chance of living longest who does the least to get rid of it;” and says he never saw a case cured.

¹ Obstet. Works, vol. i. p. 254.

³ Dict. de Méd. art. Ovaires.

⁵ Midwifery, 1811, p. 95.

² Principles and Prac. of Midw. p. 817.

⁴ Am. ed. 1807, p. 60.

⁶ Med. Obs. and Inquiries, vol. ii.

Ashwell,¹ who is much opposed to extirpation, in view of the comparative freedom from suffering, and long period which a patient may live, with occasional tapping it may be, seems to have but slight confidence in medical treatment alone. Speaking of the internal surfaces of ovarian cysts,² he adds, "It has never yet been shown that absorbents exist in their structure. That these internal surfaces secrete, there can be no doubt; and in this they resemble the peritoneum: but here the similarity terminates; the absorbent function being only partially and doubtfully performed by the adventitious serous membranes."

On the other hand, I have met with a large number of cases reported as cured by medical treatment; but, considering the extreme difficulty of the positive diagnosis of this disease, they are, in my opinion, entitled to but little weight against such testimony as I have adduced. When complicated with ascites, medical treatment, no doubt, has diminished the size of the abdominal swelling, by causing absorption of the ascitic fluid, as suggested by Burns. Instances of this sort are frequently mentioned.³

Percival claimed to have met with good results from the use of emetics; but the case which he gives, in confirmation of this opinion, was, in all probability, a rupture of the sac into the stomach or bowels. The patient was attacked with violent retching on leaving her bed, and, during the day, vomited several pints. In a few days, during which three gallons, exclusive of stools and urine, were discharged, the tumor disappeared. If, under the use of emetics, the straining of the patient should cause a rupture of the sac into the peritoneum, the event might not be so gratifying, particularly if its contents should happen to be of an irritating nature.

Dr. Hamilton⁴ says that he has frequently effected a cure by the long-continued use of moderate and equable pressure by a bandage; subjecting the enlarged part, twice a day, to

¹ Dis. of Women, p. 646. ² Page 680. ³ Craig's case, No. 97 of Synopsis.

⁴ On Use and Abuse of Mercurial Medicines, Am. ed. 1821, p. 168.

percussion (either with the fingers, or an instrument contrived by him for the purpose); small doses, for several months, of muriate of lime and tincture of colomba; daily use of warm bath, and exercise in the open air. He also recommends the use of medicated fomentations, and, internally, conium. He acknowledges, however,¹ that cases, "which might have remained for years without inconvenience to the patient, have been forced into morbid activity by a course of mercury."

Rayer also is said to have cured three cases out of thirty-three by friction and iodine;² and, were it necessary, many other cases might be mentioned.

PARACENTESIS.

In estimating the value of this as a means of radical cure, we are again met with doubts as to the correctness of the diagnosis in very many of the numerous cases reported as successful. Conceding this, however, many of these recoveries have followed only after intense inflammation of the cyst and of the peritoneum, placing the patient's life in great danger from exhaustion. To this liability to inflammation of the cyst,³ we may add the danger of internal hemorrhage from a wound by the trocar of the epigastric artery, or some large muscular or omental branch⁴ (it being well understood that these are not generally, in such cases, in a normal state), or of some of the large vessels ramifying over the cyst;⁵ escape of the contents of the cyst into the peritoneum, with resulting peritonitis; wounding the uterus, as would necessarily have happened in Dr. Ingleby's⁶ case, had she been tapped, and which actually did happen in Sargent's⁷

¹ Page 167. ² *Lancet*, vol. ii. 1848, p. 121.

³ McDowall's paper, *Dub. Hosp. Gaz.*

⁴ *New-Jersey Med. and Surg. Reporter*, June, 1856, p. 292, for a fatal case reported by Dr. Peaslee.

⁵ *Watson, Practice of Physic*, vol. ii. p. 380.

⁶ *Lancet*, vol. ii. 1839-40, p. 10. ⁷ No. 269 of *Synopsis*.

case ; and wounding the intestine, which, as we shall see, is not unfrequently adherent to the anterior part of the cyst.¹ In addition to these, it is now pretty well demonstrated that there is a peculiar liability to inflammation of the lower lobes of the lungs after operations upon the abdominal cavity ; and, finally, when the cyst is reached by the trocar, the contents are not only sometimes, but very often, so gelatinous in their consistence as to bar all attempts at removal² without a considerable incision ; and this is not tapping. So great, then, is the danger,³ and so rapid the accumulation after the first tapping, that the best authorities regard it but as a forlorn hope, to be delayed until the patient's sufferings from dyspnœa, and pressure on other organs, render it absolutely necessary.

I should mention here, that, beside the more ordinary method of tapping through the abdominal parietes, both the vagina and rectum have been earnestly recommended as preferable points in which to make the opening, on account of their more dependent position in relation to the cyst. So long ago as 1783, Mr. Watson⁴ tapped through the vagina,⁵ applying pressure afterwards, by a flannel roller, around the abdomen, leaving the canula in the wound over night, after the first tapping ; and there is another case in the same journal, by Sir William Bishop. This plan has been frequently adopted when the presence of an ovarian tumor has obstructed the progress of labor ;⁶ and Dr. Merriman and Mr. Chevalier both give cases where, under similar circumstances, the cyst has been tapped through the rectum.⁷

¹ Cases of Mussey, Norman, and Teale, Nos. 222, 231, and 265, of Synopsis.

² Mr. Abernethy, in witnessing a case of this kind, dissuaded from farther attempts, observing that "it would not do to go on boring holes in the belly." Blundell's Principles and Practice of Midwifery, p. 819.

³ For other cases illustrative of this danger, see Dr. Bright's paper, in Guy's Hosp. Reports, No. 6, April, 1838.

⁴ Med. Communications, vol. i. Lond. 1784.

⁵ Though tapped for ascites, the left ovary was, after death, found to be encysted.

⁶ Dr. Lever's Communication, vol. xxiii. of Medico-Chir. Transactions.

⁷ Medico-Chir. Transactions, vol. x. pp. 56-67.

PARACENTESIS, COMBINED WITH OTHER TREATMENT,

As pressure, counter-irritation, mercurials, &c., gives us better results, which the opponents of Ovariectomy have much insisted upon, particularly of late years. The most strenuous advocate of this plan is Mr. I. B. Brown, of London, who gives the credit of it to Mr. Gilson, of Essex. Besides the case of Mr. Watson, mentioned above, Mr. Searle¹ describes a new compressing instrument of his invention, with an account of its trial in a case of ovarian dropsy. At first it was injurious, giving rise to pain, &c. : but, after the patient was tapped by Sir Astley Cooper, it seemed to have some effect in preventing the refilling of the cyst ; and we have seen that Mr. Cooper himself (p. 4) indicates a similar treatment.

Mr. Brown, whose various papers on this subject may be found in the "Lancet,"² urges that none of the severer operative proceedings are justifiable until this has had a trial. His first plan was to procure slight ptalism by the use of mercurials, internally and externally, combining with it, at the same time, pressure by very tight flannel bandaging until the cyst became smaller, or ceased to increase ; then to evacuate the cyst entirely by tapping, resume the bandaging, and continue it, with mercurials, diuretics, and tonics, for some weeks longer. In his later papers, he abandons the employment of mercurials ; acknowledging that, in one case at least, they had been injurious, and that, of the four cases originally reported as successful, in two the disease had returned. Mr. Eccles³ reports a case successfully treated in this way ; and Mr. Hunt, in the same journal,⁴ reports another ; though he objects to the mercurial, and says that there are serious objections to the compression, it interfering with proper peristaltic action, and exciting distressing flatulent spasms and severe vomiting. Dr. Locock⁵ says that

¹ Medico-Chir. Review for Sept. 1824.

² Vol. i. 1844, 1847, 1848, 1849, and 1852.

³ Lancet, vol. i. 1846.

⁴ Ibid. vol. i. 1847.

⁵ Ibid.

where the health is good, and the cyst simple, he has seen a single tapping, followed by pressure, result favorably in many cases, and, omitting the mercury and diuretics, thinks the above plan worthy of attention. Dr. Tanner reports three successful cases;¹ and Dr. Hamper² reports another, in which the tapping was through the vagina. Mr. Brown appears to have had from fourteen to twenty cases; it is impossible to say how many, they are so often repeated in the different papers.³

Not only is this method inapplicable to those cases in which prolapsus of the womb, bladder, or vagina, already exists in consequence of the pressure exerted by the ovarian growth itself, but it may produce these effects where they have not before complicated the case.⁴ Dr. Ashwell⁵ says that pressure has probably done more harm than good. Mr. F. Bird mentions a case in which femoral hernia was caused by it,⁶ and makes also the following pertinent inquiry: "If the diminution in size has once commenced under this treatment, why not persevere with it, and not tap the patient at all?"

Mr. Barnard⁷ reports the case of a patient who was tapped four times in the course of eighteen months. After the last tapping, a seton was passed through the integuments over the tumor, a dozen leeches applied weekly for a time, together with calomel and opium, until the mouth was sore. She recovered, and continued well for three years. I mention this case here, only because it is often erroneously quoted as cure by seton into the cyst.

INCISION. — PERMANENT OPENING IN THE CYST.

The happy results sometimes following the spontaneous rupture of an ovarian cyst, either through the abdominal

¹ *Lancet*, vol. ii. 1852, p. 261.

² *Brit. and For. Med. Rev.* vol. xx., from a German journal.

³ He gives two only in his book "On the Surgical Diseases of Women," p. 213.

⁴ Van Buren's case, *Synopsis*, 282.

⁵ *Diseases of Women*, p. 562.

⁶ *Lancet*, vol. i. 1846, p. 586.

⁷ *Ibid.* January, 1830.

parietes, the rectum, the vagina, or into the peritoneum, has naturally led to the attempt to imitate this process of nature, either by simple incision, tapping, or incision and leaving the canula or a tent in the wound ; excision of a portion of the cyst ; a seton passing from the abdominal parietes, through the cyst, and brought out through the vagina ; opening by caustic ; subcutaneous incision ; incision through the parietes into the cyst, with closure of the external wound, &c. Though every little variation in detail has been claimed as a discovery, the general principle aimed at has been to allow of the gradual contraction of the cyst, and adhesion of its walls ; and, though I shall mention these details, it seems unnecessary for our present purpose to attempt to arrange them in groups according to the particular method employed. I have taken only such cases as I have happened upon in searching for cases of extirpation ; and it is probable, therefore, that very many have escaped notice : but I have collected enough to enable the reader to form some judgment as to its value as an operation, in comparison with Ovariectomy. Several cases will be noticed in which the operation for entire extirpation was attempted, and relinquished in consequence of adhesions or other cause ; others again, in which injections were used : but, as they were either detersive or secondary in their object, they would seem properly to belong here, rather than to the next section.

M. Voisier¹ reports that Dr. Bruheld cured a case by incision in 1671, and refers, for an account of it, to the *Philosoph. Trans.* of 1724. I find no such case reported there, the reference being probably erroneous. He says also that Monro performed the same operation unsuccessfully.

Dr. Houston's well-known case, quoted by Denman, Monro, Boivin, and Duges, Ashwell, Gorham, Seymour, and others, is in the thirty-third vol. of the *Philosoph. Trans.* p. 8. I give a condensed sketch of it. Margaret Miller ; age, fifty-eight ; tumor of thirteen years' growth ; last child born at

¹ *Lond. Med. and Phys. Jour.* vol. xi. 1804.

forty-five, at which time the midwife “violently pulled away the burthen,” after which she was never free from pain in the left groin. There being great suffering from distention, Dr. Houston, in August, 1701, with an “imposthume” lancet, laid open about one inch, and, nothing coming, extended it to two inches. A little thin, yellowish serum only appearing, he incised two inches more, and found that a gelatinous substance “bunged up the orifice.” It being so slippery that he could not seize it, he wrapped the end of a strong fir splinter about with lint, and, by turning and twisting it in the wound, drew out two yards in length of a substance thicker than jelly, and in breadth about ten inches! “This was followed by nine quarts of such matter as is met with in Steatomatous and Atheromatous tumors;” several hydatids, “the least larger than an orange;” and “several large pieces of membranes.” He then squeezed out all he could, and stitched the wound in three places. The woman recovered, and lived fourteen years without any return of the disease.

Le Dran¹ proposed incision, and gives the following: Patient aged sixty; at forty-eight, menses became irregular; and, for several years, she had menorrhagic and acrid fetid discharges from the vagina. During the last eighteen months, these had ceased; the belly gradually enlarging, until the swelling reached nearly to the navel. Had been tapped twice, at intervals of six weeks, for ascites; and was seen by him the day after the last tapping, in February, 1737, the canula still remaining in the wound. He enlarged the orifice to four inches with a bistoury, and, to insure a free opening, left in a broad lead canula. For six weeks there was abundant sanious suppuration and membranous exfoliations. During this period, injections were used twice a day: at first, “déter-sives;” afterwards, “vulnéraires et desiccatives.” In five months the canula was removed, leaving a fistulous opening; and, three months afterwards, fluctuation was discovered between the fistula and pubes, for which an incision was made

¹ Mémoires de l'Acad. de Chirurgie, t. ii. p. 303.

six to seven inches long, dividing all of the right and part of the left rectus, oblique and transverse muscles, and the epigastric artery. Three pints of pus were removed ; the hand introduced, and no tumor found, this abscess being apparently unconnected with the ovary. The wound closed in seven weeks, and she lived four years, — the post-mortem revealing malignant ovarian disease. He recommends that this method should be resorted to before the sac has formed such adhesions as to prevent its collapse.

Le Dran's second case, 1746. — Single woman ; age, forty-two ; tumor two years' growth ; menses irregular, and latterly arrested ; fifteen pints drawn by tapping, and the tumor discovered in the left iliac region. Refilling in three weeks, he made an incision "assez grande pour qu'elle ne pût se resserrer promptement," and introduced a canula. Had a severe attack of suppurative inflammation, during which injections of barley-water and honey of roses were used twice daily. At the end of six months, discharged a spoonful only daily. In two years, the wound closed entirely on withdrawing the canula, and the menses returned naturally.

De la Porte.¹ — Age, fifty-seven ; ten months' growth in *left* side. On being tapped, a small quantity of gelatinous fluid only escaped. The ensuing day he made an incision of five inches, and the next day, it having contracted, extended it three more. Diarrhœa and fever set in, of which she died the thirteenth day, sixty-seven pounds having been removed. Post-mortem ; encysted tumor of *right ovary*, with firm adhesions to mesentery bladder and rectum, and gangrenous openings in the sac, allowing of escape of its contents into the peritoneum. *He suggests the propriety of removing the tumor entirely in such cases.*

Dr. Warren, 1783.² — Negress ; age, thirty-two ; four

¹ The year is not given ; but the case was reported by Morand, with the cases of Le Dran and others, and could not have been far from 1740. *Mémoires de l'Acad. de Chirurgie*, t. ii. p. 316.

² *Memoirs of Amer. Acad.* vol. i. p. 551.

children, youngest twelve years old; disease began after birth of the first. He made an extensive incision through the rectus muscle into the cyst, left side, discharging a quart of watery matter and pus. Introducing his fingers into the cavity, a substance "like soft soap" was felt; of which four pounds, containing hair, was extracted by a table-spoon at this and the three or four subsequent dressings. Finally, the whole hand was introduced into the cavity in search of bone or other débris, but none was found. Recovered in three months: the menses continued regular, but she did not again become pregnant.

Osiander, 1799.¹ — Age, forty; married three years; no children; coition painful, and menses suppressed. He made an incision, and pressed out eight pounds of gelatinous fluid. She soon died of peritonitis, and both ovaries were found to be encysted.

Bernard.² — Recommended incising the cyst for two inches by means of a sheathed bistoury, passed through a puncture to be previously made by a trocar, as an imitation of spontaneous rupture. He advises it only in the event of their being no considerable tumor remaining after a preliminary tapping, allowing the cyst to refill before the incision is made. He thinks this a better plan than any "hitherto proposed, whether by injecting fluid into cavity, or introduction of seton."³

Voisier.⁴ — Age, thirty-seven; tumor beginning after parturition. The cyst refilling in five months after tapping, she was tapped again, and one end of a seton introduced into the cyst. After some time, through neglect, the fistula was allowed to close; and she tapped herself with a penknife at the umbilicus. Death ensued in two months.

¹ Encyc. des Sciences Médicales, vol. xxvii., reported by Bluff, from a German journal of 1799.

² Lond. Med. and Phys. Jour. vol. viii. 1802, p. 387.

³ Dr. Tilt (Lancet, vol. ii. 1848, p. 144) mentions a case in which Maissonneuve, of Paris, made this subcutaneous incision with a cataract knife. No acute symptoms followed; but, in nine months, the cyst refilled.

⁴ Lond. Med. and Phys. Jour. vol. ii. 1804.

Archer.¹ — Married; one child five years ago, at which time disease commenced. Three weeks after it began, was lanced two inches deep; a tent introduced, and healthy pus discharged for three weeks; at end of a year, a living worm, eight or nine inches long, like a lumbricus, escaped; in another year (occasional discharges occurring), a tooth was discharged. Wound closed, and she remained well for three years. Nothing said of origin of lumbricus. Was there communication with bowels?

McKeever, Dublin.² — Age, forty; married, and several children; fourteen months' growth; menses irregular. An incision of two inches was made, and two gallons of healthy-looking pus discharged. Wound healed in six days. Three months after, a small opening occurred in cicatrix, with discharge of pus. Healed finally in a few weeks.

Scudamore, 1824.³ — Age, thirty-six; repeatedly tapped; and finally the canula was left in (after the fluid was removed), and *stopped by a plug*. The plug was several times removed at intervals of eight days, and a portion of fluid drawn. Finally, diluted port wine was injected, and again sulphate of zinc, producing merely a sensation of heat. Died, in a few weeks, from exhaustion.⁴

Trowbridge, 1827.⁵ — Incisions, tent, injections, and recovery.

Trowbridge.⁶ — Mrs. F.; married ten years; one child, six years old; tumor three years' growth; left ovary. Made a "free opening," and removed three quarts; then inserted a tube, through which the discharge continued, with pain and feverish excitement, for some weeks. Tube worn for five months; recovered.

¹ New-York Med. Repos. vol. vi. 1809.

² Edin. Med. and Surg. Jour. vol. xvi. 1820.

³ Reported by Lizars, Edin. Med. and Surg. Jour. vol. xxii. 1824.

⁴ Mr. Lizars states also that Prof. Dzondi, of Halle, advised partial extirpation of the cyst, and the introduction of a tent to insure a permanent external opening; but Dr. Dohlhoff, of Magdebourg (L'Expérience, May, 1838), a pupil of Dzondi's, denies this, and expresses astonishment at Lizars's assertion.

⁵ No. 266, Synopsis of Ovariectomy Cases.

⁶ Boston Med. and Surg. Jour. Aug. 1841.

Trowbridge.¹ — Mrs. C. ; age, twenty-seven ; married ; left ovary ; several years' growth. At end of one year became pregnant, and while so was tapped, and five quarts removed ; the tube was left in for five weeks, with constant discharge ; it was then removed, and, at full term, had a safe delivery. In two years, pregnancy again, with delivery at full term ; after which the cyst refilled, and seven quarts were removed by tapping. She died, in six weeks, of inflammation of the cyst.

Lowenhardt.² — Incision ; matter continuing to discharge for two months, with cure.³

Mussey, 1828.⁴ — Incision, tent, and recovery.

Galenzowski.⁵ — Incision, tent, and recovery.

Recamier⁶ reports the following, performed by him, July 23, 1838, with the design of carrying a seton from the vagina entirely through the cyst and abdominal parietes : Age, twenty-six ; one child ; menses regular ; eight years' growth. For the last six years, she has passed, every six months, a " pot de nuit " full of pure blood. He first removed four-fifths of the contents by tapping. He then tapped through the posterior part of the vagina, but could not reach the cyst. No bad symptoms for a week. In three weeks, she discharged from the rectum several basins of yellowish-green fetid liquid, with a corresponding diminution in the size of the tumor. This discharge, together with intestinal hemorrhage, continued until her death, seven weeks from the operation. The autopsy revealed a cyst of the left Fallopian tube, opening into the ascending colon. He says that he has opened them several times by means of caustic potash. Velpeau,⁷ speaking, I presume, of the same case, says that Recamier succeeded in establishing a communication with the

¹ Boston Med. and Surg. Jour. Aug. 1841.

² Archives Générales de Méd. vol. lviii. p. 362 (quoted by Mr. Bainbrigge).

³ It seems quite as probable that this case was an abscess of the broad ligament. It occurred immediately after delivery ; the opening was per vaginam ; and she was well in a week or two.

⁴ No. 222, Synopsis.

⁵ Ibid. No. 171.

⁶ Revue Médicale, Jan. 1839.

⁷ Dict. de Méd. art. Ovaires.

vagina. Mr. Tilt also¹ says that a long India-rubber tube was passed through both openings.

Truckmüller.²—Age, forty; married; no children; menses regular; opened abdomen with caustic potash; incised the cyst, and removed the contents daily for some time, injecting a decoction of oak bark. In eight weeks, the wound closed. Died, in a year, of cancer of the spleen.

Dohlhoff.³—Tapped, and inserted tent; ten days after, injected wine, without effect, and afterwards a dilute solution of pernitrate of mercury. No local bad effect; but she died, in six days, of exhaustion from the disease.

Dr. Brown, of Maine.⁴—After a second tapping, made an incision of an inch, from which, in forty-eight hours, two gallons of gelatinous matter escaped. The wound healed; but she died in one month from the first tapping.

Dr. Ollenroth,⁵ of Berlin, in 1843, proposed a method analogous to that of Le Dran, and gives the following case illustrative of it. The patient had been tapped many times; and finally a part only of the contents was removed, and the canula plugged. For four days, a little was allowed to escape twice daily, by removing the stopper; then, for three weeks, but once daily. The fluid gradually became puriform and offensive. She recovered entirely in one month, and was well two years after. Scudamore, nearly twenty years before, as we have seen (p. 15), had followed a similar plan.

Clay.⁶—Incision and tent; discharge had not ceased at end of a year.

Clay.⁷—Tent through a part of the solid portion of an ovarian tumor, after incision. Recovered in five weeks.

Allison, of Indiana.⁸—Age, thirty-five; fourteen years' growth, during which period she bore three children, and had

¹ Lancet, vol. ii. 1848.

² L'Expérience, Feb. 1838, from Journal de Grâefe.

³ Encyc. des Sciences Méd. vol. xxx. from Rust's Magazine, 1838.

⁴ Boston Med. and Surg. Jour. 1841.

⁵ Brit. and For. Med. Rev. vol. xvii. 1844.

⁶ Synopsis, 107.

⁷ Ibid. 111.

⁸ Phila. Med. Ex. June, 1846, and Aug. 1847.

three miscarriages; was tapped several times, and, at last, a tent introduced, and worn nearly four months. Getting worse, a solution of iodine was injected, followed by alarming symptoms for a few days, when the discharge began to diminish. The tent was worn many months; and, more than a year after, there were a few drops of pus discharged occasionally.

Bainbrigge,¹ of Liverpool, has proposed another modification; i.e., to excise a portion of the sac, and fasten its edges to the corresponding external wound by sutures, to prevent escape of viscera, or the contents of the sac, into the peritoneum. Where adhesions exist, of course this is unnecessary; and his operation, so far as I see, differs in no respect from Le Dran's, except that he objects to the introduction of canulas or bougies in place of a simple tent. He operated March 14, 1846, with the intention of removing a portion of the cyst, and attaching its edges to the wound of the parietes. In consequence of extensive adhesions, this was unnecessary; and, after wearing a tent some five months, the tumor had disappeared, and health returned, though there was still a discharge of half an ounce a day. During the progress of the case, detersive injections were used.

Prince.² — Obligated to abandon extirpation, inserted a tent, and patient recovered.³

Tilt,⁴ of London, proposes the following: 1st, To establish solid adhesion to the anterior parietes of the abdomen, by the method adopted in case of hydatid cysts of the liver, — i.e., the application of Vienna paste; and then, by a very small opening, allow the contents to escape only as the cysts contract. There seems to be nothing new in the principle involved. He gives a case, in which, after the external communication had been established in this way, moderate pressure was used, and, in a few weeks, the discharge became

¹ Lond. Med. Gazette, vol. xxxix.

² Synopsis, 237.

³ Tent inserted also in his case of splenic tumor, Synopsis, 238.

⁴ Lancet, vol. ij. 1848.

purulent and offensive. Injections of tepid water were used daily for some months, the cyst gradually contracting. In the course of a year, she was "in effect well," though the fistula remained for several years. During the progress of this case, purulent stools were passed for several days, probably from an ulcerative opening between the cyst and bowels. Dr. T. also mentions —

Trousseau's plan, of causing adhesions of the cyst to the parietes by introducing pins over a small surface; after securing which adhesions, a puncture was made, and a tent of platinum wire introduced. Trousseau's three cases, however, died.

Dr. Douglass, in June, 1848,¹ repeated the operation of Ollenroth. He made a free incision down to the sac, from which he drew three or four quarts by tapping, and plugged the canula. A pint or more was drawn each day, for several days, after which the stopper was removed altogether. In about a week, the discharge became purulent; and, in six months, she recovered entirely.

Brown, I. B.,² of London, proposes a modification of the operation of Bainbrigge, as in the following case. He made an oblique incision, of three inches, in the middle third of the space comprised between the umbilicus and the superior spinous process of the ilium; another, of an inch and a half, at a right angle to the lower end of this, directed towards the symphysis pubis; then tapped the sac, and divided the peritoneum to correspond with the first incision. He then fastened the cyst, on either side of the incision, to the tendon of the external oblique muscle, laid it open, inserted a tent of oiled lint, and applied adhesive straps to the abdomen to keep up gentle pressure. The patient recovered.

He considers the advantage to be in having the opening in the side, and therefore more dependent.

¹ Charleston Med. Jour. 1851.

² Lancet, vol. i. 1850, p. 130, and vol. ii. p. 587; also Dis. of Women, &c. p. 227.

Another¹ modification which he proposes, where the fluid is unirritating, is to excise a piece of the cyst after evacuating the fluid, and then close the external wound entirely, leaving any fresh accumulation to be absorbed by the peritoneum. Of this, he gives three fatal cases; and, though he speaks of other organic disease, it seems evident that this result was due to the operation. In a paper² read before the Medical Society of London, he gives two more cases treated in this way. One recovered, after an attack of peritonitis. In the other, there were two cysts: he excised a portion of one, and tapped the other only; and, though she recovered from the operation, this latter cyst had been repeatedly tapped since. Why a portion of the second cyst was not excised, does not appear.

Gabb,³ of Hastings, operated by incision, November, 1851, fastened the sac to the parietes, and inserted a tent of lint. Offensive serum, gas, and pus escaped to the thirteenth day, when it became healthy, and so continued to the time of the report, say five months, the health steadily improving.

Howard,⁴ obliged to abandon extirpation, excised a portion of cyst, and inserted tent. Died in seventeen days.

Crouch,⁵ through an incision two inches long, drew out a portion of the sac, excised a piece the size of a crown, and closed the external wound, after returning the sac into the abdomen. The wound re-opened the fourteenth day, and a large quantity of fetid air and matter escaped. Injections of warm water, and, occasionally, iodine or zinc. Contraction went on slowly; but, at the end of sixteen weeks, she died suddenly, from escape of matter into peritoneal cavity. As the operation is described, the only wonder is that the matter did not escape earlier.

¹ Mr. Crouch (*Lancet*, vol. i. 1854) says that this plan originated with Mr. Wilson, of Bristol. In his book, Mr. Brown also credits Mr. Wilson. See also Bernard's proposal, p. 14 of our Essay.

² *Lancet*, vol. i. 1852, p. 544.

³ *Canada Med. Jour.* July, 1852, from some English journal.

⁴ See *Synopsis*, No. 186.

⁵ *Lancet*, vol. i. 1854, p. 41.

Southam.¹ — Bainbrigge's operation, and death.

Anderson.² — A silver tube worn in the incision twenty-one months, at the end of which time the discharge amounted to half an ounce a day only ; the patient washing out the cyst herself, as occasion required.

Prof. Kiwisch,³ of Prague, proposes the vagina as the proper place for the permanent opening from the cyst (p. 16). This, though varying in detail, is, in principle, the same thing as Recamier's. Prof. Kiwisch gives the following conditions, as necessary to success : 1. That the case be free from complication, and the tumor unilocular ; which is to be ascertained by tapping, and emptying the cyst entirely. 2. The cyst should not be so large as to contain more than fifteen pounds of fluid. 3. The cyst to be incised so freely as to permit the easy introduction of the fingers. 4. Injections to be thrown deeply into the sac (to wash it out), of such temperature as agreeable to the patient. 5. The tube to be withdrawn at intervals, but not altogether, until the discharge becomes purulent. He gives the following illustrative case. The tumor projected downwards into the recto-vaginal cul de sac : it was punctured with a curved trocar through the vagina, nine pounds drawn, and the canula left thirty hours in the wound. In ten days, was tapped again, and the puncture enlarged with a bistoury. Several pounds of bloody pus, and flakes of lymph, were removed. Water was then injected with force, and the canula allowed to remain permanently in the wound. She recovered in six weeks, and, a year after, was in perfect health ; there being a small, hard, mobile body, the contracted sac, alone remaining, and causing no inconveniencé. He has operated on three, who died either from the operation or the previous disease ; and, of twenty-five cases, three only were radically cured.

Velpéau⁴ claims to have advocated this method in 1831,

¹ See Synopsis, No. 253.

² Lancet, vol. i. 1853, p. 348.

³ See Lond. and Edin. Monthly Jour. of Med. Sciences, vol. ii. 1846, p. 230.

⁴ Dict. de Méd. art. Ovaires.

and says that M. Nonat operated in this way once, the disease recurring; that M. Michon also did the same, but, on removing the canula the following day to cleanse it, it could not be replaced; and that a new puncture was followed by fatal peritonitis, the canula having penetrated into the peritoneal cavity.

Dr. Meninger,¹ of New York, operated in this way, January, 1854. The eleventh day, the tube escaped, and could not be replaced. Warm chamomile injections were employed; and, in six months, the discharge ceased, and she recovered. He says that Callisen first operated in this way; and that it was recommended at the Academy of Surgery, in Paris, by Allen, as early as 1767.

Dr. Schnetter,² of New York, performed the same operation. The discharge continued some time; but, the patient's health not improving at the end of four months, he discovered, on examination, a tumor of the other ovary, which was treated in the same manner. Alarming symptoms followed for a time; but she recovered in eighteen months.

Mr. West, of St. Bartholomew's,³ operated by incision through the walls of the vagina in two cases. One died; the other was living eighteen months after, though there was a "chronic discharge from the ovario-vaginal opening."

Taking, for our present purpose, the foregoing cases all together, as treated upon the same general principle, though varying very much in detail, we may express the results as follows:—

Of the 73 cases, 22 recovered;	or 1 in 3.31, or 30.13 in 100.
21 died;	or 1 in 3.47, or 28.76 in 100.
30 not radically cured;	or 1 in 2.43, or 41.09 in 100.

It is to be borne in mind, that, of the number not radically cured, a large proportion would have lived but a short time

¹ N. Y. Jour. of Med. July, 1854.

² N. Y. Jour. of Med. March, 1855. This case is also in the Brit. and For. Med. Rev., copied from a German journal.

³ Lancet, vol. i. 1853, p. 343.

without relief; and that many of them purchased a long series of years of comparative ease, and freedom from suffering, at the expense only of a more or less annoying fistula. It will be noticed also, that, in many of these stated as not cured, less than six months had elapsed at the time of the report; and it is quite probable, that, at a later period, the discharge ceased altogether, with permanent cure. See cases of Galenzowski, Bainbriggs, Clay, Tilt, and Gabb.

INJECTION OF THE CYST

Has been resorted to, more or less, for the past fifty years, for the radical cure of ovarian dropsy. The use of detergent or irritating injections, to modify the action of serous or pus-secreting surfaces, is not of recent date. In the *Philosophical Transactions*,¹ Mr. Warrick, of Truro, reports the case of Jane Roman, in which he injected "Cohore claret" and "Bristol water," after tapping for ascites. She recovered. He also mentions the proposal of Garengnot to rinse out the cavity, after tapping so as to remove "the feculent part of the waters." It is only, however, of late years, that this plan has been followed to such an extent as to entitle it to rank among the established points of practice. Its most strenuous advocates have been the French. In hydrocele, hernia, synovial disease, hydrocephalus, pleurisy, ascites, and cystic disease of the ovary, it is now constantly employed; and, very recently, the pericardium itself has been treated in the same way. While looking for cases of Ovariotomy, I have noted such cases, recent or not, as I have met with treated by injection. Some of them, like similar cases quoted in the last section, are instances in which this treatment was an afterthought, as it were, suggested by the progress of the case, and not entering into the original design of the operator; and the great variety of circumstances, relating both to the operation, and the condi-

¹ Vol. xliii. p. 12, 1744.

tion of the cyst, as well as the character of the injection used, will render the result only an approximation to the truth. I trust, however, that it will not be valueless, as an evidence of the frequent success following this method.

In Le Dran's two cases (pp. 12, 13), injections were used, the patients both recovering.

Denman¹ mentions a case in which wine was injected; the patient dying, the sixth day, of inflammation.

Scudamore (p. 15) used port-wine and sulphate of zinc, without any apparent effect upon the disease; the patient dying, in a few weeks, of exhaustion.

Trowbridge² injected, as a part of the treatment, warm port-wine and water; the patient recovering in fifteen days.

Samel,³ after drawing from the cyst thirty-eight pounds of purulent, inodorous liquid, of the consistence of honey, forced air through the canula, as an irritant. Adhesive inflammation was induced, and the patient recovered.

Rigollot⁴ drew ten or twelve pounds of "purulent, fetid, greenish fluid," by tapping. Twenty days after, tapped again, and injected "a decoction of plantain and red-rose leaves, with a little wine." This caused acute pain; and, after the liquid was removed, the abdomen was kneaded, in order to inflame it! This result followed, requiring active antiphlogistics. Cure complete in one month,—a small, indolent tumor remaining.

Holscher.⁵ — After two tapplings, at an interval of four weeks, the cyst was injected with two livres of wine, which was allowed to remain ten minutes; slight febrile re-action. In three months, was well.

Truckmüller. — Decoction of oak bark injected, as part of the treatment. Recovered in two months (p. 17).

¹ Am. ed. 1807, p. 60.

² See Synopsis, 266.

³ L'Expérience, 1838, from Hufeland's Journal, October, 1830.

⁴ Med. Chi. Rev. vol. xv. 1831; and Boston Med. and Surg. Jour. vol. v., from the Trans. of the Med. Soc. of Lyons.

⁵ Encyclographie des Sc. Méd. vol. xxvii., from Revue Médicale.

Dohlhoff (p. 17).— Wine, and also a solution of pernitrate of mercury, were injected, as a part of the treatment. They seemed to have no local effect; the patient dying, in six days, of exhaustion from the disease.

Pilcher¹ injected an ovarian cyst with sulphate of zinc. Suppurative inflammation ensued; recovered. He thinks it questionable whether this, or entire extirpation, is the more dangerous.

Allison's case (p. 17) seems to have owed its success as much to the iodine injection as the permanent opening.² See also pages 18, 20, 21, for cases of Bainbrigge, Tilt, Anderson, Crouch, Kiwisch, &c.

Dr. Duplay³ says, that neither large size, advanced age, or the character of the encysted fluid, need deter from the operation; and he advises it to be done immediately after the first tapping, instead of waiting some months, as in many of the cases reported. He details the case of a patient, age sixty-five, in whom, all other remedies having failed (drastic purgatives, &c.), he drew four gallons by tapping, and then injected eight ounces of solution of iodine.⁴ After kneading well the cyst, the injection was removed. Not the slightest pain was caused; and, though some febrile re-action and tenderness ensued, she soon recovered, and continued well a year after. He quotes from —

M. Boinet, who has also had two⁵ successful cases (one injected immediately, the other some months after first tapping), as follows: “*Les femmes éprouvent une fièvre, plus ou moins forte; quelquefois il survient des nausées, quelques symptômes légères de péritonite; il y a de l'agitation, de l'insomnie; la peau est chaude, le ventre est plus ou moins*

¹ Lancet, vol. i. 1844, p. 390.

² Prof. Simpson quotes this as cure by injection.

³ In an interesting paper in the Archives Générales, 1853, p. 194.

⁴ Guibourt's formula, — Iodine, 5 parts; iodide of potassium, 5 parts; alcohol, 50 parts; water, 100 parts.

⁵ These cases are in the Archives Générales, t. xxx. 1852, p. 483; and one of them is in the Lancet, vol. ii. 1852, p. 570.

sensible, surtout dans les points en rapport avec le kyste ; mais tous ces accidents habituellement légers, cèdent promptement au repos, aux cataplasmes laudanisées, aux onctions mercurielles, et disparaissent complètement dans les premières vingt-quatre heures ; rarement ils durent plus de deux ou trois jours. Chez les sujets nerveux, la réaction est généralement plus forte ; mais elle disparaît aussi facilement que chez les autres.”

Duplay has since reported¹ another successful case.

Jobert² injected one case with alcohol, successfully ; and, on the same authority, Ricord has had one, Robert three, Boys de Loury one, and Monod several, successful cases.

Dr. Tyler Smith³ injected four ounces of tincture of iodine ; the case promising recovery at the time of the report, four days after the operation.

Mr. Brown⁴ injected five ounces of tincture of iodine (Edinburgh strength), and allowed it to remain. Trifling pain only followed ; but the case was unsuccessful, the cyst refilling.

Prof. Simpson⁵ has injected ten or twelve cases with iodine, most of them proving successful. He confirms the above opinion as to the absence of any resulting pain or excitement.

Dr. Shattuck,⁶ after a second tapping, injected four ounces of tincture of iodine. In three weeks, the fluid re-accumulated, and the operation was repeated. The patient died, in two days, of peritonitis. No autopsy could be obtained ; but, as the first injection caused no troublesome results, it is quite probable that the peritonitis was due to other causes than the iodine.

Since writing the above, I find it stated⁷ that Prof. Ackley has been successful, in five or six cases, by injecting iodine,

¹ New-Orleans Med. News and Hosp. Gaz. July, 1854, from Bulletin Thérapeutique.

² Quoted by Duplay.

³ Lancet, vol. ii. 1854, p. 459.

⁴ Lancet, vol. i. 1855, p. 384.

⁵ Obstetric Works, vol. i. p. 260.

⁶ Boston Med. and Surg. Jour. 1855.

⁷ In Western Lancet of March, 1856.

first causing adhesion of the sac to the abdominal parietes by passing in exploring needles.¹

Dr. Mussey² used injections in two cases, causing a great deal of suffering and no benefit.

Dr. Blackman³ mentions one case where injections proved fatal.

Dr. Fries also,⁴ between the two attempts at extirpation, used injections of nitrate of silver, with no good effect.

In addition to these methods, Dr. Cartwright, of New Orleans, has proposed catheterism of the Fallopian tubes, and⁵ gives the details of a case thus operated upon with success,—the only one I have met with; and Dr. Tanner⁶ has suggested the propriety, in case adhesions hinder the extirpation of the cyst, of tying the pedicle firmly, after the fluid has been removed by tapping, in the hope that this obstruction of the main arterial supply might prevent a re-accumulation of the cystic secretion, “whilst the supply of blood furnished by the adhesions” will be sufficient to prevent gangrene. I am not aware that this suggestion has ever been carried out in practice.

EXTIRPATION OF THE OVARY.

Notwithstanding the various operative procedures which we have thus hastily reviewed, and in spite of the high surgical authorities arrayed against Ovariectomy, it cannot be doubted that the operation for entire extirpation is looked upon with increasing favor by large numbers of the profession, as experience more fully demonstrates the fact, that extensive wounds of the peritoneum, and exposure of the abdominal viscera, are not so necessarily fatal, as, until quite recently, they were supposed to be.

¹ Trousseau's plan, p. 19.

² Western Lancet, March, 1856.

³ Ibid.

⁴ Synopsis, 169.

⁵ Boston Med. and Surg. Jour. vol. xlv. 1851. From New-Orleans Med. and Surg. Jour.

⁶ Druitt, p. 467.

The objections to this operation, on the one hand, and the arguments in its favor, on the other, must be qualified more or less, according to the value which the reviewer may attach to statistical results. Could we be quite sure that all unfavorable cases were as promptly and honestly reported as those which result happily, we might soon arrive at something like definite notions on the subject; but, unfortunately for the honor of the profession, it is only too true, that, of those who are known to have devoted much attention to this operation, some have been more eager to blazon forth those successful cases which may redound to their glory in the eyes of the public, than to give to their professional brethren their unsuccessful attempts, which, if conscientiously undertaken, would not lessen respect for their skill, and would so greatly benefit their suffering fellow-creatures. If the profession were a trade, this might perhaps be considered as fair and honorable; but if we are, as we are proud to consider ourselves, only God's instruments for the alleviation of human suffering, no man, in any view of the subject which ingenuity can suggest, has a moral right to withhold his experience from his co-worker in so righteous a cause. "Can there be a more flagrant violation of a solemn duty than the practice of keeping in the background what experience has taught that may be unfavorable to any peculiar plan of treatment or unwonted operation? What is it, when a man knowingly lets his fellows carry away a false impression on such subjects, but to violate every law of truth, — to indorse a lie?"¹ Prof. Dohlhoff, in confessing an error of diagnosis,² says, "*Heureux celui qui peut se rendre le témoignage de ne s'être jamais trompé dans sa vie! Moi, je n'ai pas été si fortuné; mais je suis assez sincère pour avouer mes erreurs, — peut-être plusieurs tireront de l'avantage de cette communication.*"

This objection, however, does not apply to Ovariotomy alone; and a correct table of all the known operations for

¹ Brit. and For. Med. Chir. Rev. Jan. 1852, p. 230.

² Synopsis, case 162.

extirpation will be useful to compare with what we know, through statistical tables, of other capital operations. For this purpose, several tables have been compiled, the principal of which are as follows:—

A table by Chereau, published in France many years ago, and which I have been unable to procure.

A table of eighty-one cases, by Mr. Benjamin Phillips, in the *Lond. Med. Chir. Trans.* June, 1844, p. 468.

A table of sixty-eight cases, by Mr. Walne, in “*Ashwell on Dis. of Women*,” London, 1845, p. 667.

A table of eighty-nine cases, by Dr. Cormack, in *Lond. and Ed. Monthly Jour.* May, 1845.

A table of a hundred and eighteen cases, by Mr. T. S. Lee, in his essay “*On Tumors of the Uterus*,” London, 1847.

A table of sixty-six cases, by Dr. Churchill, of Dublin, in *Dub. Jour. of Med. Sciences*, July, 1844.

A table of seventy-four cases, by Mr. S. J. Jeaffreson, *Lond. Med. Gaz.* September, 1844.

A table of two hundred and twenty-two cases, by Dr. Atlee, in *Trans. of Am. Med. Ass.* 1851.

A table of a hundred and sixty-two cases, by Dr. Robert Lee, of London, “*Ovarian and Uterine Diseases*,” London, 1853 (these last all operated upon in Great Britain).

Mr. Phillips’s table gives few details, and no references. His twenty-second case, Macdonald, should be McDowall, of Kentucky. He credits Ritter’s case to Ehrhartstein, and then gives it a second time to Ritter, and says there were no adhesions; while, in fact, Ehrhartstein was only the reporter, and there were adhesions. He gives four cases to Hopfer and Chrysmar: there were but three; and, of these, Chrysmar was the operator, Hopfer being only the reporter. He gives Chrismann credit for a case, as I think erroneously. After an extensive search, I can find no account of it: it is not in Jeaffreson’s, Churchill’s, or Ashwell’s tables, which were published later; and there is no doubt, in my mind, that it

refers to one of Chrysmar's cases. He gives a case to Gooch, which, for reasons given below, I reject.

Mr. Jeaffreson's table repeats the error as to Chrysmar and Hopfer; and his seventy-fourth case, Mr. Heath's, is reported as recovery, whereas she died.¹

Mr. T. S. Lee repeats the error as to Chrysmar and Hopfer. He gives a case to Dzondi, reasons for rejecting which I have given (see note to p. 15); and he repeats Mr. Phillips's errors as to Chrismann,² Ehrhartstein, and Macdonald. He gives no authority for his hundred and seventeenth case (Mr. W.'s); and as Dr. R. Lee's tables, published in 1853, make no mention of it, it may be a repetition of some other case. He also gives "a case in Gooch," and speaks of a second one as not reliable. These must be the same; for Gooch had but one,³ and that, by Mr. Lee's own showing, an unreliable one.⁴

Dr. Robert Lee's tables, are, like the rest, deficient in details, though his references and authorities are satisfactory; the only ones I question being that attributed to Prof. Simpson, who, according to Dr. Handyside, communicated it verbally to the Edin. Med. and Chir. Soc. in December, 1849. I have examined the proceedings for that month, as reported in the Lond. and Edin. Monthly, and find no mention of it; and I have, besides, authority which, to me at least, is satisfactory, that this case is not reliable. I have taken a number of cases from Dr. Lee's tables, not elsewhere reported by the operators; among others, one by Mr. Walne, on the authority of Dr. Hogg. A second case, by Mr. Walne,⁵ I am doubtful of, as it is not found in Ashwell; and the *violence* spoken of is by no means a characteristic of Mr. Walne's operations, if one may judge from Dr. Ashwell's and other published accounts. I take it, however, on Dr. Lee's authority.

¹ Synopsis, 180.

² "Chrysmar" or "Chrysmer."

³ Gooch, p. 222, obs. 10; the preceding observations referring, doubtless, to Lizar's case.

⁴ "On Tumors of Uterus," note to p. 274.

⁵ No. 108 of Dr. Lee's Table.

The table in Ashwell,¹ and which I suppose from the connection to be by Mr. Walne, has the appearance of having been constructed with care. It contains none of the errors above noticed ; and I have taken one (No. 30, Mr. Trustram) on its authority, — the only one which I had not already in my own table.

We now come to Dr. Atlee's table, which, from its extent, I have deferred to the last. It is more full in its details ; and I can well appreciate the labor expended upon its construction : but, as correct results are our aim, I am compelled to point out what I conceive to be its errors ; and, first, excision of fibrous tumors of the uterus is Gastrotomy, not Ovariotomy. I exclude, therefore, all such cases, unless avowedly undertaken for ovarian disease *under a mistaken diagnosis*. Otherwise we might, with equal propriety, include, under the head of Ovariotomy, all those instances in which the abdominal cavity has been opened by Cæsarian section, for intestinal intussusception, as Nuck's and other cases ; for hydatid cysts, and the cysts external to the abdominal reflection of the peritoneum, of which Morand and later surgeons have given instances.² Treating Dr. Atlee's table in this way, one must either suppose, that, out of eighteen cases reported by him and his brother, so large a proportion as five were errors of diagnosis, or they must be excluded altogether. I have doubted which course to pursue : but, as he has had so large experience in this particular branch of surgery, it is to be presumed that his diagnosis is less in fault than his tables in this respect ; and I therefore omit the following numbers, 76, 83, 199, 200, 204 ;³ besides which, I would suggest the following corrections : —

No. 2. He gives a case to Dzondi. See Professor Dohlhoff's denial of this (note to p. 15). Dr. Atlee gives no

¹ On Dis. of Women, Lond. 1845.

² Macfarland's cases, Med. Chir. Rev. July, 1835, p. 261. Also New-Orleans Med. Jour. for May, 1844, for account of the removal of such a tumor by Dr. Banks.

³ In the continuation of his cases in the Amer. Jour. Med. Sciences, April, 1855, three others are reported as Ovariotomy, 16, 17, 21.

reference; and, so far as I can ascertain, Lizars is the only authority.

No. 3. Galenzowski's was *not* a perfect cure. Though she recovered from the operation, a fistulous opening remained at the time of the report.

Nos. 9, 10. Chrysmar had but three cases, as above stated (p. 29). Two of these are repeated under Hopfer's name (86, 87); so that, of *seven* cases credited by Dr. Atlee to Chrysmar and Hopfer, there were, in reality, but *three*!

Nos. 29, 177. Two to Dieffenbach. Doubtless a repetition: they refer to the same case. See the original report, copied from Rust's Magazine into the Archives Générales, 1829, t. xx. p. 92.

Nos. 85 and 175 are repetitions of No. 32, — Ritter's case, Ehrhartstein, as I have already stated (p. 29), was only the reporter.

No. 45. Hargrave's case did not recover. See Mr. Phillips's table; also Dr. Lee's, to whom it was reported by the operator himself as being fatal in five days.

No. 67. Ashwell. There is no such case in the "Lancet" of that date; and Mr. Lee¹ says that it is a repetition of Mr. Morgan's case, sometimes called the "Guy's-Hospital case;" nor is the case mentioned by Dr. Ashwell in his book.

No. 88. Macdonald, — a repetition of McDowall (p. 29).

No. 89. Chrissmann, — a repetition of Chrysmar (p. 29).

No. 99. "Guy's Hospital," — a repetition of Morgan. See Mr. Lee, just mentioned, and compare also the general details of the two.

No. 98. "Case in Gooch," not reliable (p. 30). See also note by Mr. Lee, on Tumors of Uterus.²

No. 210. "Anonymous" I reject; the only authority being a nameless "Baltimore paper," too uncertain for statistical purposes.

No. 211. Tueffard, — avowedly *gastrotomy* for the removal of an extra-uterine foetus, which appeared, by the result,

¹ Loc. cit. p. 271.

² Ibid. p. 274.

to have escaped through the disintegrated fundus of the uterus; no indication of the ovaries or Fallopian tubes being involved at all.¹

No. 222, Mussey, he gives from Dr. Mussey himself. It was a uterine tumor; and as I suppose, from the character of the operator, that it was undertaken under a correct diagnosis, it does not belong here.

No. 188. He gives Buckner four cases, of which I make but three.² Dr. Atlee's 188 and 189 are, I think, the same; and making, with 190, the two cases referred to in the "*Am. Jour. of Med. Sciences*," October, 1850, as being in the "*Western Lancet*." This particular number is deficient in the volumes to which I have had access; nor are the publishers able to supply it.

No. 172. "Mr. W." I omit, for reasons given on p. 30.

No. 101, Professor Webster, I have taken on Dr. Atlee's authority; supposing, from its not being published, that it was communicated to him by the operator.

Nos. 176, 183. Bainbrigge's and Houston's cases were not operations for the removal of the cyst, any more than were Le Dran's, Warren's, &c.; with which cases I have placed them, under another head (pp. 11, 18).

These deductions reduce Dr. Atlee's tables from two hundred and twenty-two to a hundred and ninety-seven cases; and it is perhaps noticeable, that, of the twenty-five cases, twenty-two were recoveries to three deaths, — a matter of some importance in the resulting deductions.

In the following synopsis, I have given my authority for each case, referring to the above-mentioned tables only after making my own collection; and, in the few instances in which I have added to my own from them, the fact is mentioned. They are collected chiefly, as will be noticed, from the French, English, and American medical journals, and from

¹ *Am. Jour. Med. Sciences*, October, 1849, from Ranking, vol. ix.

² I have entered four cases to Buckner; but the last one of them could not have been the fourth of Dr. Atlee, it occurring a year after. It was mesenteric, not ovarian.

Mr. Clay's papers in the "British Record." Though revised several times, there may still be errors which have escaped notice ; but I trust that they may prove to be so few as not to vitiate materially any results to be drawn from them. For convenience of reference, they are arranged in alphabetical order, and numbered to correspond with the accompanying tabular sheets. I have admitted such cases as were undertaken on the supposition, by the operator, of their being ovarian disease, although the result may have proved that such was not the case ; and this is very necessary, as a proof of the difficulty of diagnosis. From the imperfect character of many of the reports, it is nearly impossible to derive any accurate statistical information as to the long and short incision.¹ An incision in a greatly distended abdomen, reaching only from the umbilicus to the pubes, may be twelve inches or more, and after tapping, or removal of the tumor, be no more than one-quarter part as long, in consequence of the muscular contraction immediately ensuing. After revolving the various methods of Clay, Jeaffreson, Walne, Bird, &c., I have thought it better to take a fixed anatomical point, the umbilicus, for instance, as the dividing line ; and, where this is not mentioned, I have taken six inches as the line of division. Mr. Jeaffreson, of Framlingham, makes the distinction to consist in the introduction of the hand for the long, and drawing through the cyst, after evacuating it, for the short. The hand may, however, be introduced through an incision of five or six inches only ; and, on the contrary, it may be impossible to extract a thickened cyst, even after removing its contents, through a much longer incision.² The comparative merits of the long and short incisions have been one of the bitterest elements of the controversy waged upon the subject of Ovariotomy. But I apprehend that there are other and greater dangers than the extension of the incision a few

¹ Dr. Churchill takes four inches, and Mr. Phillips six, as the line of division between the major and minor operation.

² Synopsis, — Dunlap's, Elkington's, Gross's, and Holston's cases.

inches more or less ; viz., imperfect diagnosis, the existence of adhesions, and hemorrhage from the pedicle or elsewhere ; while it yet remains to be proved whether the presence of the ligatures, and the strangulated stump of the pedicle, are not more fruitful of peritonitis than the incision itself, be it more or less.

Several cases are reported without detail, as “exploratory.” This term applies equally well to most of the operations by short incision. I have admitted all such, as they doubtless would have been proceeded with but for some unforeseen circumstance, — adhesions, for instance, or other error in diagnosis.

In those columns of the table which state whether the patient was married or single, I have ranked among the former those who have borne children, or who were known to have had connection : thus, in several instances, prostitutes are so designated.

In many of the reports, no mention is made of the ovary affected ; and in a few instances, in which, from the previous history or some circumstances attending the operation, there could be no reasonable doubt, I have made the entry either right or left, as seemed most proper.

Any peculiarity in the operation, I have noted in the margin of the tables, as a reference to the synopsis for further particulars.

For the period of recovery after operation, I have been obliged, in many cases, to exercise my own judgment. The operator’s statement has been taken when given ; otherwise, the time of removal of the last ligature. That a complete return to health, at the time mentioned, had taken place, is not to be supposed, any more than that a convalescent from fever is to be considered well the day that he is able to sit up ; but that the patient may, in the ordinary course of things, be considered as out of danger.

I should also mention, that, in the cases of Dr. Clay and Mr. Bird, where the length of the incision is not expressly

mentioned, I have entered the former as large, and the latter small, incision; such being their usual manner of operating.

SYNOPSIS OF THREE HUNDRED CASES OF ABDOMINAL SECTION
FOR THE REMOVAL OF OVARIA.

THE NUMBERS CORRESPOND WITH THE TABLES.

1. Anderson, A.¹ — Operation, Sept. 2, 1848. S. C., age, thirty-four; married nine years; one child; two and a half years' duration; tapped twice; incision ten or twelve inches; extensive adhesions, for which operation was abandoned; the other ovary diseased also, having a single cyst attached. In two weeks, the wound, which had nearly closed, burst open in a fit of coughing; and contents continued to escape until death, three weeks after the operation.

2. Arnott, J. M.² — Operation, 1848; age, twenty-three; tentative incision one inch, extended to three inches; two cysts tapped, but, firmly adhering, the operation was abandoned; died.

3. Arrowsmith, J. Y.³ — Operation, 1846; age, twenty-two (twenty-four?); had been tapped once; incision, six inches; strong adhesions, and operation abandoned; no bad symptoms. Recovered from the operation; tapped again, some weeks after.

4. Atlee, J. L.⁴ — C. R.; age, twenty-five; unmarried; seven years' growth; had had various diuretic and alterative treatment; menses irregular for last four years; tapped in June, 1840, and twenty pounds of light straw-colored serum drawn; this was repeated five times for ascites. Operation, June 29, 1843 (ovarian disease not discovered until six months previously). Incision, nine inches, between umbili-

¹ R. Lee, on Ovarian and Uterine Diseases, Lond. 1853, p. 101.

² Ibid. p. 98, from Pathological Transactions.

³ Ibid. p. 99; also T. S. Lee, "Tumors of the Uterus," p. 270.

⁴ Am. Jour. of Med. Sciences, January, 1844.

cus and pubes; peritoneum tapped, and eighteen pounds ascitic fluid removed; incision of peritoneum then extended to pubes; cyst of right ovary dipping into pelvis, and adherent; double ligature through the pedicle, and several leather ligatures, afterwards replaced by silk, to omental vessels; also tumor of left ovary, non-adherent; double ligature through pedicle; both multilocular; right weighing eighteen and left fourteen ounces; no bad symptoms; twenty-second day, rode two miles; last ligature came away Sept. 26.

5. Atlee, J. L.¹ — Operation, 1846; age, thirty-three; large incision; adhesions; cyst weighed forty-five pounds; died of pneumonia, fifteenth day; no peritoneal inflammation found after death.

6. Atlee, W. L.² — Mrs. G. S.; age, sixty-one; married; menses ceased at forty, soon after which disease began; larger than at full term of pregnancy; tapped on both sides, December, 1843, and seventeen pints albuminous fluid drawn; diagnosed encysted tumor of *right* ovary; March 7, 1844, tapped again on both sides, and removed twenty-one pints. Operation, March 29, 1844. Incision, umbilicus to pubes, afterwards extended two inches; no adhesions; cystiform tumor of *left* ovary, ten and a quarter pounds; pedicle five to six inches broad, tied with three ligatures, in three divisions; no adhesions where tapped; died, sixth day, of peritonitis; cyst, size of an orange, in right broad ligament (which, according to his second report, was ovarian), was not removed.

7. Atlee, W. L.³ — Mrs. E. K.; age, twenty-nine; married; four children; three years' growth, commencing after third child; procidentia uteri since birth of first child. Tapped, January, 1849; no fluid followed. Diagnosis, fibrous tumor, of doubtful origin. Operation, March 15, 1849. Incision, curving downwards from symphysis pubis

¹ W. L. Atlee's Tables, in Trans. Am. Med. Assoc. 1851, p. 294.

² Am. Jour. Med. Sciences, July, 1844, and April, 1855.

³ Am. Jour. Med. Sciences, October, 1849, and April, 1855.

to middle of crest of right ilium, seventeen inches long; generally adherent to iliac fossa and vessels; Poupart's ligament embedded in it; ligature around the pedicle, which consisted of right Fallopian tube and broad ligament. Fibrous tumor of right ovary, weighing eight pounds; ligature fell nineteenth day; recovered in one month; pregnant twice since, and living in 1855.

8. Atlee, W. L.¹ — Miss M. T.; age, thirty-three; four years' growth; menses at sixteen; irregular since tumor began. Operation, May 22, 1849 (tapped two months before, and got teaspoonful of *blood* only). Incision, four inches above umbilicus to pubes; no adhesions; right ovary as large as an orange, and left also diseased; but, the great mass of the tumor consisting of a diseased uterus, the operation was abandoned. Sat up in nine days; recovered rapidly. She was menstruating the day of, though I presume not till after, the operation. The diagnosis in this case was doubtful, but, from the previous history, "was willing to believe it ovarian." She died of erysipelas the following November, after incisions into the neck of the uterus, and the use of ergot, with reference to disintegration of the tumor.

9. Atlee, W. L.¹ — Miss H. M.; age, twenty-five; single; one illegitimate child; four years' duration; menses regular; tapped for diagnosis a week before the operation, and removed four gallons. Operation, June 16, 1849. Incision, two inches above umbilicus to pubes; adherent to omentum; unilocular cyst of right ovary removed, weighing forty pounds; before removal, the cyst was tapped and emptied, and a double ligature passed through the pedicle. Ligature fell thirty-sixth day, though she was able to go home in one month; had two children since; living in 1855.

10. Atlee, W. L.² — Miss L. N.; age, thirty. Operation, Feb. 6, 1850. Incision, one inch above navel to pubes;

¹ Am. Jour. Med. Sciences, April, 1850, and April, 1855.

² Trans. of Am. Med. Assoc. 1851, Atlee's Tables; and Am. Jour. Med. Sciences, April, 1855.

extensive adhesions, some of them requiring ligatures ; cyst, fourteen pounds, removed ; died, sixth day, of peritonitis, attributed to imprudence in diet.

11. Atlee, W. L.¹ — Mrs. F. C. ; age, forty-eight. Operation, Feb. 16, 1850. Incision, one inch above umbilicus to pubes ; adhesions to intestines and uterus ; spermatic artery tied ; cyst, twenty-eight pounds ; some adhering portions not removed ; died, third day, of exhaustion.

12. Atlee, W. L.¹ — Mrs. S. L. ; age, forty ; tapped five times for ascites ; lower limbs, *anasarcous* and ulcerated. Operation, March 19, 1850. Incision, one inch above umbilicus to pubes ; adhesions to thickened omentum and uterus ; cyst weighed twenty-five pounds ; removed ; died, third day, of exhaustion.

13. Atlee, W. L.¹ — Mrs. D. H. ; age, thirty-seven. Operation, June 15, 1850. Incision, one inch above umbilicus to pubes ; extensive adhesions ; some adhering portions not removed ; divided the pedicle, and tied the vessels separately ; cyst weighed twenty-five pounds ; recovered ; has miscarried once since ; living in 1855.

14. Atlee, W. L.¹ — Mrs. M. B. ; age, forty-two ; greatly prostrated, from miscarriage, fever, &c. Operation, July 25, 1850. Incision, one inch above umbilicus to pubes ; adhesions to bowels, uterus, bladder, and pelvis ; part of cyst left attached to colon ; long slender pedicle ; torsion of vessels (no ligature) ; weight, fifteen pounds ; recovered ; living, in perfect health, in 1855.

15. Atlee, W. L.¹ — Mrs. J. S. ; age, twenty-eight ; had been tapped sixteen times. Operation, Nov. 13, 1850. Incision, from a point midway between sternum and umbilicus to pubes ; extensive adhesions ; cysts weighed eighty-one pounds ; died, of *starvation*, thirtieth day. This patient was two months pregnant at time of operation ; no miscarriage. He puts this down as recovery, attributing the death to the nau-

¹ Trans. of Am. Med. Assoc. 1851, Atlee's Tables ; and Am. Jour. Med. Sciences, April, 1855.

sea consequent upon pregnancy. This may be so ; but, in the absence of evidence that the nausea was not increased by so serious a wound of the peritoneum, I report it as fatal.

16. Atlee, W. L.¹ — Mrs. M. W. ; age, 29 ; some ascites. Operation, April 16, 1851. Incision, from near sternum to pubes ; firm extensive adhesions ; pedicle, six inches broad ; multilocular ; thirty-five and a half pounds ; died, third day, of peritonitis.

17. Atlee, W. L.² — Operation, Jan. 3, 1852. Mrs. M. Q. ; age, sixty-eight. Incision, seven inches ; adhesions ; cystiform tumor, twenty-eight pounds, removed ; recovered ; still living.

18. Atlee, W. L.² — Operation, May 31, 1852. Miss H. S. ; age, twenty ; much prostrated. Incision, one inch below umbilicus to pubes ; firm adhesions ; purulent cysts, quite rotten ; omentum thickened ; weight, twenty-five pounds ; died, in thirteen hours, of exhaustion. [Were these "rotten cysts, firmly and extensively adherent," entirely removed ?]

19. Atlee, W. L.² — Operation, Aug. 16, 1852. Mrs. E. A. ; age, thirty ; five months' growth. Incision, one inch above umbilicus to pubes ; both ovaries removed ; the right, multilocular and medullary ; the left, unilocular, rotten, and gangrenous, containing offensive gas, and everywhere adherent ; weight, forty pounds ; died, in nine hours, of exhaustion.

20. Atlee, W. L.² — Operation, Sept. 14, 1853. Mrs. S. R. ; age, fifty-six. Incision, navel to pubes ; adhesions ; considerable ascites ; cystiform pedicle, broad and vascular ; weighed fifty pounds ; recovered ; still living.

21. Atlee, W. L.² — Operation, Sept. 21, 1853. Mrs. E. S. ; age, twenty-six ; six months' growth. Incision, from umbilicus to pubes ; extensive adhesions ; cystiform ; some of them gangrenous, and filled with pus ; weight, forty pounds ; died, in twenty-two days, from gangrenous perfora-

¹ Trans. of Am. Med. Assoc. 1851, Atlee's Tables ; and Am. Jour. Med. Sciences, April, 1855. ² Am. Jour. Med. Sciences, April, 1855, p. 390.

tion of jejunum, an inch in diameter; wound had healed, and ligatures come away.

22. Atlee, W. L.¹ — Operation, April 17, 1854. Mrs. J. C.; age, thirty-six. Incision, five or six inches; both ovaries removed; no adhesions; cystiform; weighing fifteen pounds; ascites; recovered; still living.

23. Atlee, W. L.¹ — Operation, July 13, 1854. Miss S. M.; age, thirty-one. Incision, umbilicus to pubes; extensive adhesions; both ovaries removed; cystiform; fifty pounds; died, fifth day, of exhaustion; extensive tubercular deposits in abdominal cavity, and disease of mucous membranes.

24. Atlee, W. L.¹ — Operation, Sept. 5, 1854. Mrs. W.; age, fifty-two. Incision, four or five inches; slight adhesions; cystiform; twenty-four pounds; recovered; still living.

25. Atlee, W. L. — Operation, Sept. 30, 1854. Mrs. J. P.; age, fifty-nine. Incision, about six inches; both ovaries and a pelvic tumor removed; right ovary, fibrous; left, cystiform and fibrous; pelvic tumor, fibrous; extensive adhesions; weight, twenty pounds; died, fifth day, of hemorrhage; source not mentioned.

26. Atlee, W. L.¹ — Operation, Oct. 19, 1854. Mrs. S. M.; age, twenty-four. Incision, from above umbilicus to pubes; adhesions; cystiform; thirty pounds; recovered; still living.

27. Atlee, W. L.¹ — Operation, Oct. 31, 1854. Mrs. A. E. L.; age, forty-two. Incision, six to eight inches; extensive adhesions; cystiform; thirty-eight pounds; died, sixth day, of hemorrhage; source not given.

28. Atlee, W. L.¹ — Operation, Dec. 16, 1854. Miss D. P.; age, 49. Incision, five inches; no adhesions; cystiform; eighteen pounds; recovered, and still living.

29. Anonymous.² — Age, thirty; married; huge cyst;

¹ Am. Jour. Med. Sciences, April, 1855, p. 390.

² Communicated by Dr. Van Buren. (See note to No. 281.)

universally adherent; death, in twenty-eight hours, from loss of blood, and shock.

30. Anonymous.¹ — Married; age, thirty-five; encysted tumor of ovary removed; death, within the week, from peritonitis.

31. Burd, H. E.² — Age, twenty-five; married; three children, — *last, seven months old*; twelve and a half months' growth; swelling *irregular*, and apparently *solid*; health good; no signs of pregnancy. Operation, Sept. 15, 1846. Incision, from pubes nearly to ensiform; no adhesions; cyst tapped, and three gallons removed; thick pedicle, tied in three divisions, and also each vessel separately; weight, fifty pounds; uterus found to be three or four months pregnant! Abortion ensued, second day. The placenta gave evidence of there having been hemorrhage; and this was mistaken for menstruation, in making diagnosis before operation; recovered in seven weeks, and had a child the following year.³

32. Bellinger.⁴ — Negress; age, thirty-five; child, seven years ago, and many abortions since; menses regular; health good; one year's growth. Operation, Dec. 23, 1835. Incision, ensiform to pubes; tumor of right ovary removed, and two large nutrient arteries tied with animal ligatures, and cut close; uterus retroverted, and so much diseased that the finger penetrated its substance, and met a sound, which was introduced through the vagina and os tincæ! Recovered in a few weeks, after enteritis from imprudence in diet; menses had not returned for the eleven years following operation.

33. Bellinger.⁴ — No name; tumor existed for many years, and very painful; operation abandoned from extensive adhesions; wound healed in a few days, and patient recovered from operation.

¹ Communicated by Dr. Van Buren. (See note to No. 281.)

² Med. Chir. Trans. vol. xxx.; and Lancet, vol. i. 1847, p. 361.

³ Lond. Med. Gaz. vol. xliii. 1849.

⁴ Southern Jour. of Med. and Pharmacy, vol. ii. p. 241, copied into the Revue Médicale, vol. xcix. 1847, p. 99.

34. Bird, Frederick.¹ — Age, thirty-five; married; never pregnant; menses regular; sixteen years' duration; disappeared for seven years of that time; tapped altogether ten times. Operation, June 26, 1843. Incision, three and a half to four inches; sac seized and emptied; slight adhesions; double ligature through, and another around, the pedicle; weight, twenty pounds; ligatures fell thirty-fourth day, and patient well.

35. Bird, F.² — Age, twenty-one; single; two years' growth; menses at sixteen, irregular since; nervous depression. Operation, Nov. 23, 1843. Tentative incision, one inch, extended to four and a half inches; no adhesions; tumor seized, tapped, and drawn out, and found to be sessile to uterus; double ligature through pedicle and broad ligament, tied in two portions; weight, twenty-seven pounds; last ligature fell seventeenth day; recovered in three weeks.

36. Bird, F.³ — Age, thirty-five; married; no children; thinks she once miscarried; menorrhagic; six years' growth. Operation, Jan. 28, 1844. Tentative incision, two inches; found sac so thin, that a cyst was punctured in opening peritoneum; extensive weak adhesions; incision extended to five inches; tumor incised, drawn through, and pedicle tied in three different divisions; right ovary; weight, thirty-five pounds; gelatinous contents; recovered in four weeks. [Incision must have been at least eight inches.]

37. Bird, F.⁴ — Age, twenty-one; unmarried; menses at fourteen, — regular since, except temporary suppression at eighteen, supposed to be the beginning of the disease; health bad; great mental depression. Operation, April 21, 1844. Incision, four inches, below umbilicus; cyst of right ovary emptied, and drawn out; no adhesions; double liga-

¹ Lond. Med. Gaz. vol. xxxii.

² Lond. Med. Gaz. vol. xxxiii. 1843.

³ Ibid.; also Lancet, vol. i. 1844.

⁴ Lond. Med. Gaz. vol. xxxiv. 1844, p. 38; and Lancet, May, 1844.

ture through pedicle ; weight, twenty-nine pounds ; recovered in seven weeks, and menses returned.

38. Bird, F.¹ — [Details of this and following cases very deficient.] Tumor so adherent that it was necessary to leave behind a portion of the cyst ; recovered.

39. Bird, F.¹ — H. T. ; adhesions ; great thickness ; removed ; recovered.

40. Bird, F.¹ — Miss D. ; large sessile tumor ; adhesions ; removed ; died third day.

41. Bird, F.¹ — Mrs. L. ; cyst bound down in pelvis, causing great suffering ; tapping required every ten or twelve days ; removed ; died third day.

42. Bird, F.¹ — Mrs. H. ; large compound tumors, involving both ovaria ; removed ; recovered.

43. Bird, F.¹ — Mrs. G. ; small tumor ; non-adherent ; removed ; died fifth day.

44. Bird, F.¹ — Large compound tumor ; removed ; died at the end of the week.

45. Bird, F.² — Miss K. ; age, twenty-one ; large tumor ; slight adhesions ; removed ; recovered.

46. Bird, F.³ — Large tumor, with short pedicle ; removed ; recovered.

47. Bird, F.³ — Mrs. P. ; very large malignant mass ; inseparably adherent posteriorly. Extreme suffering from distention by solid matter, and rapidly approaching death, it was thought rendered the attempted operation justifiable ; died the ensuing day. The following facts were given to Dr. R. Lee by Dr. Hogg (see tables, loc. cit. p. 103) : “ Married in 1841 ; never pregnant ; had been treated by pressure and tapping. Operation, Jan. 6, 1848. Incision, two inches, and extended to ten ; impossible to separate the adhesions, and operation was abandoned ; died in twenty-eight hours.”

¹ Lancet, vol. ii. 1850, p. 592.

² Ibid. ; and Lond. Med. Gaz. August, 1844.

³ Lancet, vol. ii. 1850, p. 592.

48. Bird, F.¹ — Mrs. P. ; small incision ; tapped ; not removed ; recovered.

49. Bird, F.¹ — Small incision ; tapped ; not removed ; recovered.

50. Bird, F.¹ — Miss — ; incision of larger size ; not removed ; recovered ; lived two years.

51. Bird, F.¹ — Mrs. C. ; small incision ; tapped ; not removed ; died in six weeks ; advanced in life.

52. Bird, F.¹ — Miss G. ; incision ; not removed ; recovered ; lived over two years.

53. Bird, F.¹ — Mrs. B. ; incision ; tapped ; not removed ; recovered, and lived nearly three years.

54. Bird, F.¹ — Miss B. ; incision ; tapped ; not removed ; lived six months.

55. Bird, F.¹ — Miss B. ; incision ; tapped ; not removed ; recovered.

56. Bird, F.¹ — A. B. ; incision ; tapped ; not removed ; recovered ; tapped several times afterwards.

57. Bird, F.¹ — Incision ; tapped ; not removed ; recovered, and tapped afterwards.

58. Bird, F.¹ — Mrs. S. ; incision ; tapped ; not removed ; recovered ; tapped afterwards.

59. Bird, F.¹ — Mrs. C. ; incision ; not removed ; afterwards tapped, and died.

60. Bird, F.¹ — Miss G. ; incision ; not removed ; died, next day, from rupture of hepatic abscess [which, I infer, was hastened by the operation].

61. Bird, F.¹ — Mrs. C. ; small incision ; tapped ; not removed ; afterwards tapped ; living more than a year after the operation.

62. Bird, F.¹ — S. R. ; incision ; colloid ; not removed ; living ten months afterwards.

63. Bird, F.¹ — Mrs. W. ; small incision ; tapped ; not removed ; recovered ; tapped many times afterwards.

¹ Lancet, vol. ii. 1850, p. 592.

64. Bird, F.¹ — L. ; incision ; tapped ; not removed ; living a year after.

65. Bird, F.¹ — Miss S ; incision ; tapped ; not removed ; recovered.

66. Bowles.² — Age, twenty-five ; married ; four children ; one year's growth. Operation, Aug. 5, 1844. Incision, from above umbilicus to pubes, nine inches ; adherent anteriorly to omentum, uterus, and bladder ; the ligature passed around the pedicle, and then through it ; solid tumor, attached to broad ligament, and weighed five pounds ; no bad symptoms ; two months after the operation, the wound had healed, except where ligature came out ; and there was no reason to doubt her entire recovery ; right ovary.

67. Buckner.³ — Age, thirty-nine ; several children. Operation, Jan. 31, 1850. Incision, eight inches ; numerous adhesions ; ligature around pedicle, and tumor of right ovary removed ; ligature fell thirty-ninth day ; alarming symptoms ; but she eventually recovered.

68. Buckner³ mentions a second case, Mrs. Lawrence, operated on in April, 1848, reported in "Western Lancet," October, 1848, which was successful. After lapse of two years, is in good health, and menstruates regularly ; has less sexual desire, as the only difference between her feelings now and before the appearance of the disease.

69. Buckner³ gives the following details of a third case, alluded to in the same number of the "Western Lancet : " Mrs. W. S. ; two solid tumors felt through abdominal parietes ; the upper very movable ; the other wedged in pelvis, and felt through rectum and vagina. Operation, June, 1848. Incision, from umbilicus to within an inch of symphysis pubis ; pedicle of the upper tumor attached to the lower, ligated, and removed ; pedicle of lower tumor originating in left Fallopian tube ; ligature around the diseased left ovary ;

¹ Lancet, vol. ii. 1850, p. 592.

² Am. Jour. of Med. Sciences, January, 1845, from Western Lancet, 1844.

³ Ohio Med. and Surg. Jour. September, 1850, p. 1.

pedicle of tumor ligated in four equal parts ; no adhesions ; died, sixth day, of peritonitis.

70. Buckner.¹ — Mrs. Tegarden ; nine children ; two years' growth, following eighth confinement ; suffered much, during last part of ninth pregnancy, from colic. Operation, Oct. 4, 1851. Incision, nine inches ; when the tumor was found to be mesenteric, with small intestine adherent for twelve inches ; the adhesions separated, and several vessels tied ; the thirteenth, the wound, which had united, was opened again in lower part, and two pints of fetid, decomposed blood removed ! Recovered in seven weeks ; was in good health nine months after.

71. Beale.² — Age, thirty ; unmarried ; one year's growth ; movable, and free from tenderness. Operation, Dec. 4, 1850. Incision, ten inches, from scrobiculus to pubes ; two cysts punctured, and contents removed ; double ligature through pedicle ; left ovary ; in eleven days, able to walk ; ligature came away twenty-first day ; weight estimated at twenty-five pounds, and fluid at twenty-one to twenty-three pints.

72. Bennett, Ezra, Conn.³ — Age, fifty-two ; married ; two children ; two years' growth ; tapped twice in six weeks, a few months before operation, which was in June, 1851. Adhesions, size of hand, existed between sac and parietes ; multilocular cyst, holding a pailful ; died, fourth day, of exhaustion ; no signs of inflammation !

73. Bennett, Ezra P.⁴ — Age, twenty-three ; single ; two years' growth ; size of full term of pregnancy ; menses regular. Operation, Jan. 12, 1856. Incision, three inches ; no adhesions ; sac emptied, drawn out, and double ligature through pedicle ; recovered, without an unpleasant symptom.

74. Brown, I. B.⁵ — Miss B. ; age, thirty ; over nine

¹ Am. Jour. Med. Sci. October, 1852.

² Lond. Lancet, vol. ii. 1851.

³ Am. Jour. of Med. Sciences, January, 1852.

⁴ New-Orleans Hosp. Gaz. May, 1856, p. 166.

⁵ Lancet, vol. i. 1852, p. 544 ; "On Dis. of Women," &c., p. 261.

years' growth ; was treated in its commencement, 1843, by tapping, pressure, mercurials, &c. ; last two years, enlarging again. Operation, March, 1852. Made tentative incision of four inches, with the design of excising a portion of the cyst ; tapped, and drew nine pints ; no adhesions ; after excising a portion, it proved to be so vascular as to require entire extirpation (see next case) ; ligature around the pedicle ; left ovary ; ligature fell in four weeks, and, following day, she was in her drawing-room ; married in 1853, and became pregnant.

75. Brown, I. B.¹ — M. A. B. ; age, twenty-three ; married ; no children ; menses regular ; two years' growth ; no dyspnœa, though it extended close to ensiform cartilage. Operation, May 20, 1852 (tapped 11th). Incision, below umbilicus, of three inches, afterwards enlarged ; cyst vascular ; peritoneum adherent ; tapped, and drew eighteen pints ; adhesions ; double ligature through pedicle ; two cysts and a solid tumor removed ; died, in forty hours, of *hemorrhage from a band of adhesion*. Intended, as in No. 74, to excise only a portion of the cyst.

76. Brown, I. B.² — E. D. ; age, thirty ; married ; one child ; eighteen months' growth ; size of six months' pregnancy. Operation, June 16, 1852. Incision, seven and a half inches, extending above umbilicus ; adhesions ; tapped and incised, and a small amount of gelatinous, puriform, bloody fluid escaped ; tumor extracted ; ligature around pedicle ; one omental vessel tied ; left ovary ; semi-solid ; eleven and three-quarter pounds ; menses appeared twenty-sixth day ; died, thirty-first day, of peritonitis ; two openings into bowels found after death.

77. Brown, I. B.³ — Mrs. B. ; age, fifty-seven ; seven children ; thirteen months' growth ; right side ; thirteen quarts removed by tapping, four months before, followed by bandaging

¹ Lancet, vol. ii. 1852, p. 377 ; and " Dis. of Women," &c., p. 257.

² Ibid. and " Dis. of Women," &c., p. 263.

³ Lancet, vol. i. 1854, p. 365.

and mercury; cyst refilled. Operation, March 2, 1854. Incision, three inches; no adhesions; ascitic fluid escaped, and tumor with it; pedicle tied; tumor, cystic, removed; ligature came away in thirteen, and she went to the country in fourteen, days. The pedicle and ligature were kept external, as in Mr. Erichsen's case (No. 168).

78. Brown, I. B.¹ — Miss E.; age, twenty-seven; six years' growth (?); had been treated by tapping and pressure, and was so much better as to marry. Incision, four inches, afterwards enlarged twice; slight adhesions; three cysts; ligature around pedicle, common to all of them; died, third day, of peritonitis. (Full length of incision not given: I have reckoned it as long.)

79. Brown, I. B.² — Mrs. D.; age, thirty-seven; nine years' growth; tapped seven times in past five years. Operation, July 1, 1852. Incision, eight inches; adhesions; pedicle tied, and multilocular disease, weighing seventy pounds, removed; died, fifth day, of peritonitis.

80. Brown, I. B.³ — Mrs. R.; age, thirty-seven; two children; two years' growth. Operation, April 6, 1854. Tentative incision, one inch, extended to three and a half; adhesions; pedicle tied in four portions, and retained at external edge of wound; died, ninth day, of peritonitis; piliferous cyst.

81. Bayless.⁴ — No details; operation successful.

82. Bayless.⁵ — Age, twenty; married; two children, one seven, the other five, years old; four years' growth. Operation, Jan. 15, 1853 (tapped in previous August). Three gallons first drawn by tapping; then incision of six inches made below umbilicus; several cysts tapped, to amount of one gallon; adherent, by a narrow band, to the fold of the peritoneum, holding the sigmoid flexure of the colon in its

¹ "Dis. of Women admitting of Surgical Treatment," p. 256.

² Ibid. p. 259.

³ Ibid. p. 280.

⁴ Trans. of Am. Med. Assoc. vol. iii. 1850, p. 379.

⁵ Am. Jour. Med. Sciences, July, 1853, from St. Louis Med. and Surg. Jour.

place, and also to the fimbriated extremity of the left Fallopian tube, which was dissected from the tumor, ligatured one and a half inch from uterus, and cut away; ligature around pedicle and tumor removed; died, in twenty and a half hours, of hemorrhage; two and a half quarts of blood found in abdomen, supposed to have come from external incision, the ligatures being all firm. The long band of adhesion, not ligatured, may have been the source of the hemorrhage: see Gross's case, No. 175; also Brown's, No. 75. He speaks of other cases, one of which was removed with success, after being tapped seventeen times [possibly the preceding case, 81].

83. Bradford, Ky.¹ — Miss H.; single; age, twenty-one; twelve years' growth, having *commenced at nine years of age*, after scarlatina; menses appeared at twelve, and continue regular; variety of treatment; health failing. Operation, June 14, 1853. Incision, eighteen to twenty inches, between ensiform and pubes; adhesions to omentum; cyst tapped, extracted, and double ligature passed through pedicle; left ovary, forty-one pounds, containing, attached to inner wall, plates of bony substance, varying in size from pin's head to saucer; up sixteenth day, and ligature came away sixth week.

84. Bigelow, H. J.² — Age, twenty-two; one year's growth; ascites; tapped twice, and ropy, transparent fluid drawn. Operation, Dec. 29, 1849. Incision, umbilicus to pubes, afterwards extended; cysts tapped; adhesions divided, and tumor of left ovary removed, weighing eight pounds; also a small fibrous tumor of uterus, three quarters of a pound; died third day.

85. Burnham.³ — Age, forty-two; single; six years' growth; diagnosticated disease of left ovarium. Operation, June 25, 1853. Incision, two inches above umbilicus to pubes,

¹ Am. Jour. Med. Sciences, April, 1854.

² Boston Med. and Surg. Jour. January, 1850.

³ American Lancet, January, 1854.

and discovered a fibrous pediculated tumor of fundus uteri, a fibrous tumor of the left ovary, a cystic tumor of right ovary; the uterus also was enlarged, and impacted in the pelvis. The pediculated tumor was first ligatured and removed; then the left ovarian tumor dissected from the broad ligament, and (first tying the spermatic vessels) removed; then the right ovarian sac incised, and the liquid removed; fourthly, the uterus itself dissected from its attachments, down to the reflection of the vagina from the cervix, and removed, only the two uterine arteries requiring ligature; and, last of all, the right ovarian sac (previously emptied) removed! After violent peritonitis, with offensive suppuration from abdomen and vagina, the patient was out of danger, and able to be up in thirty-five days! He claims to have operated on six cases, all but one successful; but I find no report of them.

86. Baker, Alfred.¹ — Age, eighteen; began at age of twelve years three months; six years' growth. Operation, May 7, 1851. Incision, two inches, afterwards enlarged; cyst punctured, and seven gallons discharged; universal adhesions; considerable hemorrhage; cyst removed; died, in twenty-six hours, of collapse.

87. Blackman.² — Tapped several times. Operation, Dec. 22, 1855. Adhesions slight; ovarian tumor of twenty-two pounds removed; no bad symptoms after; recovered.

88. Cooper, Bransby.³ — Age, thirty-two; married; never pregnant; menses always irregular; disappeared spontaneously at end of a year; in eighteen months, refilled and disappeared again; in twenty months, refilled and tapped, and again in thirteen months; about five years' growth. Operation, Nov. 3, 1843. Incision, from three inches below ensiform to pubes; slight adhesions; double ligature through pedicle; died, of peritonitis, in seven days; cyst of right

¹ R. Lee's Table, loc. cit. from the operator.

² Western Lancet, March, 1856.

³ Med. Chir. Trans. vol. xxvii. p. 81.

ovary weighing thirty-two pounds; fungoid disease of uterus discovered after death.

89. Cornish.¹ — L. B.; single; age, nineteen; eighteen months' duration; menses at fifteen, tolerably regular, with exception of six months. Operation, Feb. 19, 1850. Temperature of room, eighty-five degrees; incision, four inches above umbilicus to pubes, — ten inches; tapped; adhesions slight; two double ligatures, at intervals of half an inch, through the pedicle; two small omental vessels ligatured; fifty-fourth day, wound healed, and menstruated next day; tumor of right ovary, seven and a half pounds, five of them fluid; was well two years and more after.²

90. Chrysmar.³ — Age, forty-seven; eight children; sixth delivered by forceps; bad recovery from eighth, and menses ceased three years after; about four years' growth; left ovary. Operation, May 16, 1819. Incision, from ensiform to pubes; a gallon of *ascitic* fluid removed; extensively adherent to colon, stomach, and peritoneum; adhesions separated, and pedicle tied with two ligatures; also two branches of epigastric; tumor, seven and one-third pounds, lardaceous and cartilaginous; died, in thirty-six hours, of peritonitis, and gangrene of intestines.

91. Chrysmar.³ — Age, thirty-eight; married at twenty-five; five children in seven years; metritis after the fourth, from which period the disease dates its origin. Operation, June, 1820. Incision, ensiform to pubes; tumor of left ovary, larger than a child's head, removed; adherent posteriorly to pelvis; no bad symptoms; recovered in six weeks; fibrous tumor, and weighed eight pounds; recovering, became pregnant, and was well eight years afterwards.

92. Chrysmar.³ — Age, thirty-eight; single; rickety; menses always irregular; six years ago, tumor discovered in

¹ Lancet, vol. ii. 1850, p. 680.

² Lancet, vol. ii. 1852, p. 70.

³ Archives Générales, t. xx. 1829, p. 93, from Græfe and Walther's Jour. vol. xii.; Lond. Med. Gaz. February, 1829; and Brit. and For. Med. Rev. October, 1843, p. 398.

connection with ascites ; had been tapped for ascites. Operation, August, 1820. Incision, ensiform to pubes ; three quarts ascitic fluid discharged ; adhesions only to projection of sacrum ; double ligature around pedicle, which was four inches thick ; died, from shock, peritonitis, and gangrene of intestines, in thirty-six hours ; left ovary removed, lardaceous, filled with fibrous cysts, weighed six and a half pounds ; the right ovary also was enlarged, and the liver and uterus diseased.

93. Crouch.¹ — Age, twenty-four ; single ; growth two years ; tapped in previous May, and seven pints drawn. Operation, July 9, 1849. Incision, nine inches ; five cysts tapped ; slight adhesion ; not less than two hundred cysts of left ovary, filling the pelvis ; two double ligatures through pedicle, as in *nævus* ; four cut close, and four left out ; no bad symptoms ; menses appeared second day ; sitting up the twelfth day ; recovered in five weeks ; cysts weighed four pounds ; married next year, and had a child, October, 1851.

94. Crisp.² — Twenty years' duration ; twice tapped ; contained three gallons ; no adhesions, even where tapped ; recovered.

95. Childs.³ — M. W. ; age, thirty-three ; married ; two children ; ten months' growth ; size of eight months' pregnancy ; right ovary. Operation, March 28, 1853. Incision, three inches, below umbilicus ; no adhesions ; tapped, and pailful of dark-brown fluid drawn ; several cysts extruded ; double ligature through pedicle, and, after its division, a ligature to the principal artery ; recovered.⁴

96. Childs⁵ mentions a second case ; no details ; patient died of diarrhœa.

97. Craig, J., Ky.⁶ — Mrs. H. ; age, twenty-six ; one

¹ Lond. Med. Gaz. vol. xlv. 1849, and December, 1851.

² Lancet, vol. i. 1839-40, p. 287.

³ Lancet, vol. i. 1853.

⁴ Vol. i. 1854, p. 617.

⁵ Lancet, vol. i. 1854, p. 420.

⁶ Western Jour. of Med. and Surg. August, 1855.

child; menses at fifteen; at sixteen had suppression from cold, and never after regular; complicated with ascites, which disappeared several times under treatment. Operation, April 22, 1854. Tentative incision, three inches, afterwards extended to scrobiculus; ascitic fluid escaped; adhesions (previously diagnosticated); tapped cyst, but found contents too thick to pass through the canula; found very extensive adhesions to omentum and small intestines; contents evacuated, and tumor extracted; double ligature through pedicle (of left ovary); recovered in seven weeks, and, four months after, was perfectly well; solid part, eleven and three-quarter pounds; "fluid viscid, with masses of fat floating in it;" under microscope, "oil globules, granular cells, and crystals of cholesterine."

98. Clay.¹ — Mrs. Wheeler; age, forty-six; eight children; three years' growth; menses regular; prolapsus of vagina. After moving the bowels with inspissated ox gall, the operation was performed, Sept. 12, 1842, temperature of room about seventy-one or seventy-two degrees. (He attaches great importance to the temperature, and the exhibition of ox gall.) Incision, sternum to pubes ("in all cases, the incision should be proportioned to the size of the tumor"); adhesions; six and a half pints of ascitic fluid; solid tumor of right ovary removed, weighing seventeen pounds five ounces; ligature around pedicle, and vessels tied separately also; bled twice; flatulence relieved by introducing tube into rectum; in three weeks, completely recovered.

99. Clay.¹ — Eliz. Beswick; age, fifty-seven; nine children; ten months' growth; twenty-five and a half pounds ascitic fluid removed a week before operation. Operation, Oct. 7, 1842. Incision, two inches above umbilicus to pubes; unexpected adhesions; double ligature through pedicle; cystic and solid tumor of left ovary, weighing nine pounds; recovered in two weeks.

¹ British Record of Obstetric Med. vol. i. p. 179, *et seq.*; and Med. Chir. Rev. October, 1843.

100. Clay.¹ — Mrs. Dillon ; married eight years ; no children ; age, forty-six ; menses regular ; seven years' growth ; tapped two years before, and two pints of bloody fluid drawn ; menstruating at time of operation ! Operation, Oct. 26, 1842. Incision small, and a large vascular tumor, universally adherent, discovered ; punctured, and pure blood followed ; operation abandoned ; died sixth day ; malignant disease, estimated at thirty pounds.

101. Clay.¹ — Hannah Edge ; age, thirty-nine ; three children ; seven years' growth, beginning after birth of second child ; enormously distended ; tapped five times, the last being five days before operation ; complicated with ascites. Operation, Nov. 8, 1842. Incision "bold ;" adhesions very extensive ; cysts of right ovary immense, and, with solid part, weighed seventy-three and a half pounds ; ligature on pedicle, which appears to have consisted of the right Fallopian tube and broad ligament ; left town in five weeks ; was well six years after.

102. Clay.¹ — Mrs. Hardy ; age, forty-five ; never had children. Operation, 17th (?), 1843. Size of eight months' pregnancy ; incision, thirteen inches ; no peritoneal adhesions ;² surprised to find vascular tumor involving both ovaries and nearly the whole of the uterus, all of which were removed ; notwithstanding ligatures, hemorrhage followed, and she died in an hour and a half ; weighed, in all, thirteen pounds.

103. Clay.³ — Hannah Hague ; age, twenty-two ; single ; never had children ; five or six years' growth ; had been tapped six times ; menses regular ; had been salivated. Operation, Aug. 21, 1844. Long incision ; adhesions ; solid and cystic tumor of right ovary, weighing twenty-nine pounds fourteen ounces, removed ; recovered in twenty-three days.

¹ British Record of Obstetric Med. vol. i. p. 179, *et seq.* ; and Med. Chir. Rev. October, 1843.

² It is not clear that the ovaries were removed ; though, from the description, I judge that they were.

³ British Record of Obstetric Med. vol. 1. p. 282 ; and Dr. Lee's Tables.

104. Clay.¹ — Miss R. ; age, thirty-five ; tapped seven times, the last four days previously ; ten or twelve years' growth. Operation, Jan. 21, 1845. Incision, fourteen inches ; no adhesions ; cystic and solid ; twenty-three pounds ; removed ; went home the fifteenth day.

105. Clay.² — Mrs. L ; had been frequently tapped, and ruptured two or three times spontaneously beneath umbilicus. Operation, March 10, 1843. Adhesions extensive ; solid and cystic tumor, of twenty-five pounds and a half, removed ; died, of hemorrhage from the pedicle, in twenty-seven hours. The hemorrhage seems to have been accidentally caused by fright in sleep.

106. Clay.³ — Mrs. B. ; had had various methods of treatment tried upon her ; tapped once. Operation, October 5, 1843. Incision, four inches ; more than two large wash-hand-basins of loose hydatid cysts escaped ; uterus, liver, spleen, and right ovary, enlarged. Operation abandoned ; tent inserted ; discharge continued ; recovered from the operation in a week ; and from the disease, the discharge ceasing in about six months. This can hardly be considered ovarian disease : it was error in diagnosis.

107. Clay.⁴ — Mrs. Woods ; larger than full term of pregnancy, and had had several inflammatory attacks. Operation, July 23, 1845. Incision, four inches ; universally adherent ; sac incised, and emptied of twenty pounds ; tent inserted ; fifth day, discharge became purulent ; recovered from operation in eight weeks ; more than a year afterwards, the discharge had not ceased, though her health was good.

108. Clay.⁵ — Mrs. S. ; age, fifty-one ; menses irregular ; one child, twenty-nine years previously ; tapped four days before operation, which was done Jan. 14, 1846. Incision, umbilicus to pubes, six inches ; no adhesions ; cyst of left ovary, six pounds ; recovered in eight days.

¹ British Record of Obstetric Med. vol. i. p. 285 ; and Dr. Lee's Tables.

² Ibid. p. 289.

³ Ibid. p. 318.

⁴ Ibid. p. 320.

⁵ Ibid. p. 322.

109. Clay.¹ — Mrs. T.; age, thirty-five; ten years married; never pregnant; tapped four times, last being four days before operation, which was done Aug. 28, 1845. Right ovary, cystic and solid, eighteen pounds; trifling adhesions; recovered in three weeks, and menstruated regularly since, though irregular before.

110. Clay.² — Mrs. S.; age, thirty-eight; married twelve years; sterile; four years' growth; menses ceased; tapped three times. Operation, Oct. 5, 1845. Cystic and solid; fourteen pounds' weight; recovered in four weeks; two large cysts.

111. Clay.³ — Hannah P.; age, twenty-seven; three years' growth; menses irregular; tapped once. Operation, Sept. 1, 1848. Right ovary cystic and solid; partially removed; long tent passed through a portion of the solid part, and both ends brought out of external wound; fetid, purulent discharge the fourth day; discharge ceased, and tent came away in five weeks, and menstruation re-appeared.

112. Clay.⁴ — Mrs. Hague; four children; began during pregnancy; complicated with ascites; tapped twice. Operation, June 2, 1847. No adhesions; cystic and solid; fourteen and a half pounds; recovered in one month; conceived five months afterwards, and aborted at seventh month; age, thirty-two.⁵

113. Clay.⁶ — Mrs. Young; age, thirty-two; one child; four years' duration; menses irregular for three years; tapped five times. Operation, July 12, 1846. Incision, thirteen inches; cystic and solid tumor, of twenty-two pounds, removed; recovered in five weeks, and menses became regular.

114. Clay.⁶ — Mrs. R.; age, forty-five; never pregnant; twelve years' growth; menses irregular. Operation, March

¹ British Record of Obstetric Medicine, vol. i. p. 363.

² Ibid. p. 365.

³ Ibid. p. 368.

⁴ Ibid. p. 369.

⁵ Lee's Tables, from which I have taken the age of several.

⁶ British Record of Obstetric Medicine, vol. i. p. 390.

12, 1846. Incision, sternum to pubes; adhesions; right ovary, forty-six pounds, removed; solid; recovered, after peritonitis, and menstruation became regular.

115. Clay.¹ — Mrs. Jones; age, fifty-one; sixteen years' growth; emaciated; tumor of forty pounds removed (solid?); some adhesions; died, of exhaustion, in thirty-six hours.

116. Clay.² — Mrs. Elliot; age, forty; never pregnant; menses irregular. Operation, Aug. 30, 1843. Adhesions; cystic and solid tumor of right ovary, thirty pounds, removed; died, in forty-eight hours, of peritonitis.

117. Clay.² — Mrs. Priest; age, forty; ten or twelve years' growth; tapped three times. Operation, Nov. 16, 1843. Incision, ten inches; adhesions; cystic and solid; sixteen pounds; removed; recovered (right ovary?).

118. Clay.² — Eliz. Winstanley; age, twenty-six; three or four years' growth. Operation, Nov. 9, 1846. No adhesion; cystic and solid tumor of right ovary, weighing thirty-five pounds, removed; died (peritonitis?), tenth day, from imprudence in diet.

119. Clay.² — A. Brooks; age, fifty-two; sixteen years' duration; menses irregular. Operation, Jan. 16, 1844. Incision, twelve inches, and found, beside disease of left ovary, ascites and enlarged uterus; both ovaries and uterus removed; did well to thirteenth day, when inflammation was caused by a fall, and she died the fifteenth day after the operation.

120. Clay.³ — Mrs. Lythgoe; age, fifty-one; disease of long standing. Operation, March 15, 1848. Incision, ten inches; adhesions; ascites; right ovary, cystic, forty pounds; recovered in about three weeks.

121. Clay.³ — Mrs. Ball; age, forty-seven; five or six years' growth; tapped in March; some time after, made exploratory incision, and, on account of adhesions, declined proceeding; tapped again, in June, and the 14th of June,

¹ British Record of Obstetric Medicine, vol. i. p. 390.

² Ibid. p. 391.

³ Ibid. p. 392.

1848, operated, making incision lower down than the first to avoid adhesions, and removed the tumor with ease ; died, sixth day, of exhaustion.

122. Clay.¹ — Mrs. Brown ; age, forty ; tumor removed ; forty-six pounds ; recovered.

123. Clay.² — Miss M. K. ; tumor removed ; died, within twenty-four hours, from shock and great exhaustion.

124. Clay.² — Mrs. Trail ; age, thirty-five ; ascites ; cystic tumor removed ; died third day.

125. Clay.² — Ellen Duxbury ; age, twenty-seven ; cystic and solid tumor removed ; forty-eight pounds ; since married.

126. Clay.² — Mrs. S. (Oldham) ; age, forty-five ; tumor removed ; twenty-eight pounds ; recovered, and continues well.

127. Clay.² — Mrs. Alice ; age, twenty-five ; tumor, forty pounds, removed ; recovered.

128. Clay.² — Miss J., Ireland ; age, eighteen ; tumor removed, of thirty pounds ; died, of shock and exhaustion, in thirty-six hours.

129. Clay.² — Sarah Jackson ; age, forty-seven ; tumor removed, thirty-seven pounds ; recovered, and remains well.

130. Clay.² — Mrs. Roberts ; age, twenty-seven ; tumor removed, thirty pounds ; died, ninth day, of exhaustion.

131. Clay.² — Mrs. R. ; age, thirty-five ; tumor, twenty pounds, removed ; died, of inflammation, third day.

132. Clay.² — Mrs. McA. ; age, thirty-seven ; tumor removed, of forty pounds ; recovered slowly, but now in good health.

133, 134, 135, 136, 137. Clay.² — Exploratory operations. First four recovered ; tumors not removed [probably from adhesions] ; short incisions. 137, not removed ; recovered from operation ; was tapped, and died, thirty-five days after the exploratory operation, of exhaustion.

¹ British Record of Obstetric Medicine, vol. i. p. 393 ; also Lee's Tables.

² Ibid. p. 394.

138. Clay.¹ — Mrs. W.; tumor removed, 1849; age, thirty-three; weight, thirty-one pounds; pregnant since.

139. Clay.¹ — Miss W.; age, thirty-two; removed, 1849; thirty-five pounds; recovered.

140. Clay.¹ — Mrs. S.; age, forty-eight; removed, 1849; seventy-six pounds; recovered.

141. Clay.¹ — Mrs. H.; age, forty-five; removed, 1850; twenty-four pounds; recovered.

142. Clay.¹ — Mrs. S.; age, thirty-eight; removed, 1850; twenty-four pounds; recovered.

143. Clay.¹ — Miss B.; age, thirty-five; removed, October, 1850; twenty-seven pounds; died, ninth day, of inflammation and obstruction of the bowels.

144. Clay.¹ — Mrs. P., of Manchester; age, thirty-three; removed, November, 1850; weight, ten pounds; recovered.

145. Clay.¹ — Mrs. P., of Glasgow; age, fifty-seven. Operation, November, 1850. Weighed twenty-six pounds; recovered.

146. Clay.¹ — Mrs. H.; age, thirty-two; sterile; small tumor removed; recovered.

147. Clay.¹ — Mrs. C.; age, forty-five; tapped ten times. Operation, February, 1851. Tumor, twenty-five pounds, removed; died second day.

148. Crume² says he operated, eight years ago, for ovarian tumor, and found *tubal fœtation* instead! Result not given.

149. Duffin, E. W.³ — Age, thirty-eight; good health; eight months' growth. Operation, Aug. 27, 1850. Tentative incision; no adhesions; enlarged to three inches; sac tapped, and drawn through the aperture; double ligature through and another around the pedicle; *pedicle and ligatures kept from receding by stitching them to the external wound*; ligature and slough came away fifteenth day, and she recovered in three weeks; left ovary.

¹ R. Lee's Tables, to whom they were given by Dr. C.

² Western Lancet, March, 1856. ³ Lond. Lancet, vol. ii. 1850, p. 583.

150. Dickin.¹ — Age, eighteen ; unmarried ; twenty months' growth. Operation, 1845. Incision, fourteen inches ; adhesions ; double ligature through pedicle ; right ovary ; twenty-eight pounds ; able to be up and walking about at end of three weeks.

151. Day.² — Mrs. Howard ; age, forty-two ; married twenty-one years ; nine children ; two and a half years' growth ; one full pregnancy during that time ; nursed twelve months ; weaned, June, 1850 ; tapped in August, 1850 ; in a month, refilled, and had diarrhœa and dyspnœa. Operation, Sept. 26, 1850, five gallons *ascitic* fluid previously drawn by tapping. Incision, five inches ; no adhesions ; incision extended from ensiform to pubes ; double ligature through pedicle ; left ovary ; ligature came away fifteenth day, and was followed by "appearance and smell of feculent matter ;" this soon ceased, and she was well Oct. 31, — five weeks.

152. Dunlap, Ohio.³ — Mrs. B. ; age, thirty-seven ; five children ; one year's growth (probably) ; tapped four times in last six months. Operation, March 24, 1853. Incision, umbilicus to pubes, twelve inches ; adhesions slight ; cyst evacuated, and with solid portion, size of child's head, extracted ; double ligature to pedicle ; thirteenth day, walked across room ; ligature fell in three weeks ; left ovary, thirty-seven pounds.

153. Dunlap.³ — Mrs. F. ; age, forty-six ; growth, three years ; menses ceased at forty. Operation, May 17, 1853, same as preceding. Incision, ten inches ; slight adhesions to omentum ; ligature fell twenty-seventh day ; left ovary, sac and contents, thirty-one pounds ; menses appeared second day, and continued three days (probably uterine congestion, not menstrual).

154. Dunlap.⁴ — Mrs. H. ; age, thirty-five ; six children ;

¹ Am. Jour. Med. Sciences, January, 1846 ; and Brit. and For. Med. Rev. January, 1847 ; also Lee's Tables.

² Am. Jour. Med. Sciences, October, 1851, from Brit. Prov. Med. and Surg. Jour.

³ Am. Jour. Med. Sciences, October, 1854.

⁴ Western Lancet, June, 1851 ; and Am. Jour. Med. Sciences, October, 1854.

last, three years old ; tumor of six months' growth. Operation, June 10, 1850. Incision, umbilicus to pubes, eight inches ; sac evacuated ; incision extended to eleven inches ; extensive adhesions ; double ligature through pedicle ; flatulence relieved by tube ; ligature came away in one month ; recovered in six weeks ; has had a child since.

155. Dunlap.¹ — Operation, 1843, never reported. Cystiform tumor, weighing forty-five pounds, removed ; died, seventeenth day, of diabetes !

156. Dunlap.² — Jane Ramsey. Operated, Nov. 15, 1855. Tumor of sixty pounds removed ; seventeenth day, doing well, and promised speedy recovery.

157. Deane.³ — Age, forty-three ; one year's growth ; "movable, globular, symmetrical, smooth, and solid ;" supposed to be tumor of left ovary. Operation, June 6, 1848. Incision, from umbilicus to pubes, and found a solid, fibrous tumor, embracing the entire left half of the uterus, this organ having the appearance of being embedded in the tumor ; operation abandoned ; no hemorrhage ; excessive collapse, followed by violent inflammation ; able to sit up in a fortnight.

158. Deane.⁴ — Age, forty-five ; several years' growth ; tapped once. Operation, 1850. Incision, twelve inches ; no adhesions ; double ligature around pedicle, and each vessel tied separately also ; died, of peritonitis, twelfth day ; tumor, thirty-seven pounds.

159. Dieffenbach, Berlin.⁵ — Age, forty (une Polonaise) ; married at eighteen ; never pregnant ; menses regular ; ten or twelve years' growth ; caused by a blow and domestic troubles ; *movable in every direction, and partly on its own axis even*. Incision, from three inches above umbilicus to

¹ Am. Jour. Med. Sciences, October, 1854.

² Western Lancet, February, 1856 ; and New-York Med. Times, March, 1856.

³ Boston Med. and Surg. Jour. vol. xxxix. 1848.

⁴ Boston Med. and Surg. Jour. January, 1851.

⁵ Archives Générales, 1829, t. xx. p. 92, from Rust's Mag. ; and North-American Med. and Surg. Jour. vol. viii.

within four or five of pubes ; peritoneum opened four inches ; tumor found to have a broad base, containing large, strongly pulsating vessels ; adhesions to vertebral column ; an incision caused hemorrhage, which could only be arrested by pressure ; operation abandoned, and, after very severe symptoms, she recovered from it.

160. Dohlhoff, Magdeburg.¹ — Maria Bock ; age, twenty-three ; single ; four years' growth ; first symptom, suppression of menses, following tertian fever ; during second year, had abundant epistaxis nearly every day. Operation, Sept. 27, 1836. Incision, four to six inches ; cut out a piece of cyst, and removed the liquid with the hand and a cup ; cyst, an inch thick ; no adhesions ; ligature around pedicle, and tumor of the left ovary, cystic and solid, thirty-eight pounds, removed ; the ligature then removed, and the vessels tied separately ; died, in thirty-six hours, of peritonitis, without re-action. The peritonitis, which was extensive, was not suspected before death, there being weak pulse, no pain, and great prostration.

161. Dohlhoff.¹ — E. R. ; age, twenty-seven ; menses regular since seventeen ; married at twenty-four ; never pregnant ; four months' growth ; size of six months' pregnancy, and very painful. Operation, Oct. 21, 1833. Incision, two inches above umbilicus to pubes ; tumor very adherent ; and the peritoneum and epiploon being strewn or covered² with little tumors, the size of a nut, and the vessels being very large, the operation was abandoned ; died in eight hours. After death, it was impossible to remove the tumor whole. Though the operation was undertaken for diseased ovary, the tumor does not appear to have originated in either of them.

162. Dohlhoff.¹ — F. G. ; age, twenty-three ; first discovered after attack of tertian fever ; menses regular ; ten months' growth, and reaching above navel ; very painful ; had obstinate constipation, requiring three drops of Croton oil

¹ L'Expérience, from Rust's Mag. ; Encyclographie des Sciences Médicales, t. xxx.

² "Parsemées."

to move the bowels. Operation, September, 1836. Incision, five inches; no sign of tumor to be found! Recovered, after a severe attack of peritonitis. It was probably fecal accumulation; though he supposes it to have been spasm of the intestines, or an hysterical affection.

163. De Morgan, C.¹ — Age, twenty-five; single; three years' growth. Operation, Oct. 29, 1849. Small incision; delicate, compound cysts, with transparent contents; universal adhesions, and operation abandoned; in fourteen days, as large as ever; recovered from operation.

164. Emiliani.² — Dr. E. operated in 1815, by a small incision, with success. His son, Prof. E., of Modena, records the case, and says that she has since given birth to five children, two of whom were twins.

165. Elkington.³ — Age, thirty-one; married fifteen months; menses irregular since two months before marriage; tapped once. Operation, 1849. Incision, twelve inches, and obliged to diminish the tumor before it could be removed; slight adhesions; ligature through pedicle; weight of tumor, forty pounds; recovered in about one month; no bad symptoms; in April, 1851, had a child.

166. Elkington.³ — Mary B.; age, thirty-seven; two children; three years' duration; *tumor very movable*; tapped for ascites seven times in the six months preceding operation, which was in July, 1846. Tentative incision, and, no adhesions being felt, enlarged to six inches, when it was found to be adherent, by long, loose bands, to bladder, uterus, intestines, and abdominal parietes; operation abandoned; died, fourth day, of peritonitis.

167. Elkington.³ — Mrs. L.; age, forty-seven; married twenty-six years; five children; eighteen years' growth; two children since tumor began. Operation, July 18, 1848.

¹ Robert Lee's Tables, loc. cit. communicated by Dr. West.

² Brit. and For. Med. Rev. vol. xx. from *Bulletino delle Scienze Mediche di Bologna*, December, 1843.

³ Am. Jour. Med. Sciences, January, 1850, and October, 1851, from *British Provincial Med. and Surg. Jour.*

Incision not given, but probably long; extensive adhesions to parietes and omentum; tumor removed; died, in thirty-six hours, from "shock."

168. Erichsen.¹ — Age, sixty-five; right ovary; incision, five inches, below umbilicus; sac evacuated and extracted; slight adhesions; double ligature through pedicle; and, after dissecting off the peritoneal investment for a quarter of an inch all round, the ligature was tied; and the stump of the pedicle was then drawn up, and tied in the external wound; left her bed the sixteenth day.

169. Fries.² — Patient, size of full term of pregnancy. Operation, May, 1855, having aborted of a two-and-a-half months' foetus six weeks before. Incision, ten inches; owing to adhesions, the operation³ was abandoned after evacuating the sac. In eleven days, the wound burst open, with a fetid discharge. The sac was again emptied, and various injections — among others, nitrate of silver — were tried. Finally, the woman failing, the original operation, extirpation of the sac, was completed; the adhesions, which extended over one half of its surface, being easily detached. The wound did not unite; and, the nausea and diarrhoea continuing, she died seven days after extirpation.

170. Greenhow.⁴ — Age, twenty-nine; married; menses irregular; menorrhagic, &c.; eighteen months' growth, with constant uterine discharge during that time; tapped two months before operation, followed by bloody discharge for a fortnight, with improvement of general health. Operation, Sept. 3, 1843. Incision, ensiform to pubes; adherent to omentum; double ligature through pedicle; also tied one vessel in omentum, and one in pedicle; left ovary, twelve pounds seven ounces, cystic; died, in six days, of exhaustion and peritonitis.

¹ Lancet, vol. ii. 1853.

² Western Lancet, March, 1856.

³ See case 121, in which the operation, once abandoned, was completed on a second trial.

⁴ Med. Chir. Trans. vol. xxvii. p. 88.

171. Galenzowski.¹ — Age, twenty-seven ; two years' growth ; right ovary ; menses regular ; size of seven months' pregnancy ; incision, five inches long ; completely adherent posteriorly ; sac incised, and three pounds of thick yellow fluid escaped ; a thread was passed through one side of the cyst, and brought out of wound ; a tent of charpie, dipped in oil, was then inserted ; several pounds of fluid oozed out, also three different portions of the cyst at different times ; at the end of seventy days, a small fistulous opening remained, by which pus still escaped.

172. Granville.² — Few details. Operation in 1827. Incision, nine inches and a half ; operation abandoned owing to extensive adhesions, and the patient recovered from it.

173. Granville.³ — Age, thirty to forty (say thirty-five). Operation, March 21, 1827. Incision, nine inches ; found to be fibrous tumor of the uterus, which was removed, and weighed eight pounds ; died third day, — the operator says in consequence of venesection having been unnecessarily performed by the assistant ; but Dr. L. says there was inflammation and gangrene of the intestines.

174. Garrard.⁴ — H. R. ; age, twenty ; unmarried ; seven months' growth ; size of eight months' pregnancy ; menses regular. Operation, April 25, 1855. Incision, umbilicus to pubes ; extensive adhesions ; cysts tapped ; ligature round pedicle of right ovary ; ligature came away in two months ; simple cysts, weighing fourteen ounces, measuring, when inflated, three feet two inches in the largest circumference.

175. Gross.⁵ — Miss D. ; age, twenty-two ; menses regular ; eighteen months' growth ; tapped three gallons, two weeks before. Operation, June 19, 1849. Incision, three

¹ L'Expérience, see Encyclographie des Sciences Médicales, t. xxvii. ; also Lond. Med. Gaz. vol. v. 1829, from Graefe and Walther's Jour.

² Lond. Med. Gaz. vol. xxxi. 1843.

³ Ibid. ; also New Monthly Mag. October, 1827 ; and Lee on Ovarian and Uterine Diseases, p. 86.

⁴ Lancet, vol. ii. 1855.

⁵ Western Jour. of Med. and Surg. 1853.

inches above umbilicus to pubes, one foot; right ovary, adherent, red and vascular; ligature around the pedicle, which was narrow, and, though tied "with great firmness," it came off after removal of the tumor. A large artery was secured, another ligature placed around the pedicle, and one of the divided bands of adhesion, which showed a disposition to bleed, was ligatured also; the menses appeared for two days, the thirteenth day; and, though the case had looked promising, she died, in four weeks, of peritonitis; encysted tumor, nine pounds.

176. Grimshaw.¹ — E. D.; age, thirty-seven; several children; one since disease began; had large ulcer in umbilical region, from distention; tapped eight times in eighteen months; four and a half gallons each time. Operation, Sept. 4, 1850. Incision, twelve inches; ascitic fluid escaped; adhesions; three ligatures to pedicle of left ovary; large quantity of blood lost during the operation; died, in five hours, of exhaustion; right ovary diseased also; not removed.

177. Gibson.² — Age, thirty-nine; prostitute; never pregnant; menses regular; growth not stated; tapped ten times in preceding nine months. Operation, March 10, 1850. Incision, from two and a half inches above umbilicus to symphysis; large quantity of ascitic fluid escaped; extensive adhesions, and operation abandoned; died twenty-fourth day; post mortem, malignant disease of both ovaries.

178. Groth³ extirpated left ovary; ligature around a pedicle three quarters of an inch thick; died, in sixteen hours, of hemorrhage, and two pounds of blood found in abdomen.

179. Hawkins.⁴ — Age, twenty-seven; unmarried; four years' growth; menses regular. Operation, Sept. 22, 1846.

¹ Phil. Med. Examiner, November, 1850.

² Stethoscope, and Virg. Med. Gaz. February, 1851.

³ L'Expérience, see Encyclo. des Sciences Med. t. xxvii. and xxx. from Pfaff's Journal.

⁴ Lond. Med. Gaz. vol. xxxviii.

Incision, three inches ; cyst evacuated, and drawn through ; double ligature through pedicle ; another around ; had an attack of phlebitis ; ligatures had fallen, and wound entirely healed, on the twenty-eighth day.

180. Heath.¹ — Age, forty-six ; single ; never pregnant ; excessive menorrhagia for four years ; twelve months' growth ; Operation, Nov. 21, 1843. Incision, from epigastrium to pubes, and found to be a fibrous tumor of the uterus ; double ligature through the cervix uteri ; died, in seventeen hours, of hemorrhage from the cut surface, though the ligature remained tight (?) ; weight, six pounds.

181. Hayny.² — After abdomen was opened, such extensive adhesions were found as to render the operation impracticable ; died, exhausted, the fourth day.

182. Hayny.² — Tumor removed, with a portion of adhering omentum ; after several attacks of peritonitis, died at end of six weeks ; both these operations unskillfully performed, says the reviewer.

183. Hargraves.³ — A. B. ; age, forty ; adhesions ; operation abandoned ; died in five days.

184. Holston.⁴ — Age, twenty-seven ; single ; three years' growth ; menses regular. Operation, Oct. 12, 1855. Incision, between umbilicus and pubes, seven to eight inches ; cyst of left ovary tapped and extracted ; looked like calf's stomach prepared for rennet ; double ligature through pedicle ; wound contracted to four inches ; weighed twenty-six pounds ; cyst contained one pint blood. She went home nineteenth day.

185. Howard.⁵ — R. J. ; age, seventeen ; single ; five months' growth ; menses ceased for three months ; tapped twice in preceding month. Operation, Oct. 14, 1852. Incision, three inches above umbilicus to pubes ; no adhesions ;

¹ Lond. Med. Gaz. vol. xxxiii. 1843.

² Brit. and For. Med. Rev. vol. xxiii. 1847.

³ Lancet, October, 1839, reported by Mr. Gorham ; also R. Lee's and Jeaffreson's Tables.

⁴ Western Lancet, December, 1855.

⁵ Am. Jour. Med. Sciences, April, 1853, from Ohio Med. and Surg. Jour.

dissected the peritoneum from pedicle to apply ligature; no bad symptoms; recovered in eight weeks; calls attention to method of applying ligature, as something new. (See Van Buren, 281.)

186. Howard.¹ — H. M.; age, twenty-eight; married; four children, two of them since tumor began; five years' growth; left ovary; tapped twice in previous nine months. Operation, October 26, 1852. Incision, umbilicus to pubes; owing to adhesions, extirpation abandoned; excised a portion of cyst, and introduced a tent; discharge soon became very offensive, and she died, in seventeen days, of "exhaustion" [probably gangrenous inflammation of cyst, and peritonitis].

187. Handyside.² — Jessy Fleming; age, twenty; twenty months' growth; tapped ten times; menses irregular. Operation, Sept. 5, 1845. Large incision; principal tumor was in left ovary, but both were diseased and removed; had slight pneumonia, also phlebitis, which subsided; in twenty-five days, she had, from imprudence in diet, an attack of ileus, of which she died, seventy days after the operation; both tumors encysted.

188. Handyside.³ — Mrs. P.; age, thirty-eight; married; five children; one year's growth; tapped four times. Operation, Sept. 3, 1846. Incision, four inches; both ovaries removed; ligatures carried through recto-vaginal cul de sac into vagina; died of peritonitis; cysts weighed ten pounds.

189. Jeaffreson.⁴ — Mrs. B.; two children since growth began. Operation, March, 1836. Incision, one and a half inch; cyst evacuated, and, after slight extension of the incision, extracted; ligature around pedicle, and cut close; lac-

¹ Am. Jour. Med. Sciences, April, 1853, from Ohio Med. and Surg. Jour.; also Ranking's Abs. 1853.

² Lond. and Edin. Month. Jour. vol. i. 1846, p. 446; and Edin. Med. and Surg. Jour. vol. lxxv.

³ R. Lee's Tables, No. 86, from the operator.

⁴ Lancet, January, 1837.

tation uninterrupted; recovered, and had several children since.¹ Dr. Lee says it was the left ovary.

190. Key, C. Aston.² — E. D.; age, nineteen; health good; menses regular every two weeks; fifteen months' growth. Operation, Aug. 1, 1843. Incision, from ensiform to pubes; no adhesions; a good deal of ascitic fluid escaped; double ligature through pedicle; died, Aug. 5, of peritonitis. Both ovaries would appear to have been diseased and removed.

191. King.³ — Three years' growth; tapped several times; short incision (?). The operation appears to have been abandoned, owing to escape of omentum from the wound; recovered from the operation; died, a few months afterward, from exhaustion, when the tumor was found to be an enlarged mesenteric gland.

192. King.³ — Puttock; age, forty. Operation, March, 1834. Incision, vertical and seven or eight inches long on right side of umbilicus, and another, of four inches, at right angles, extending toward spine. After twenty minutes' search, unable to find the tumor! had a sharp attack of peritonitis, but recovered; two years after, was better than before operation, though the tumor had grown one-quarter. There appears to be no doubt that there was a tumor while she was in the erect position, which escaped under "the concavity of the liver," or elsewhere, when she was in the recumbent posture.⁴

193. King.⁵ — Cavell; age, forty; six years' growth. Operation, July 12, 1836. Tentative incision; sac evacuated, and opening enlarged to three inches; sac drawn through;

¹ Lancet, November, 1843.

² Guy's Hospital Reports, October, 1843, p. 477.

³ Lancet, January, 1837.

⁴ Since this was written, I have seen a case, pronounced by the attendant to be ovarian, in which the tumor, the size of two fists, very hard, smooth, and movable while the patient was erect or lying on the left side, escaped invariably upwards, and beneath the liver, *entirely out of reach*, if the patient turned on her back. It was sufficiently easy to decide that it was not ovarian, less so to say what it was.

⁵ Lancet, January, 1837.

the ligature around the pedicle slipped off after division of tumor, when three vessels were tied, and cut short; able to be down stairs in a week.

194. Kimball.¹ — Age, twenty-five; unmarried; seven years' growth; menses regular. Operation, March, 1855. Incision, from umbilicus to pubes; sac evacuated and drawn through; no adhesions; double ligature through pedicle, and another around it; rode out in thirty-six days, though the ligature had not come away.

195. L'Aumonier.² — Marie Louise Lagrange; prostitute; age, twenty-one; the disease apparently followed delivery; exhausted from colliquative diarrhœa; had obstinate diarrhœa, and purulent discharge from vagina increased by pressure on the tumor. Incision, four inches, along lower edge of obliquus externus, and a scirrhus ovarian cyst, the size of an egg, was found in connection with an abscess, which was tapped; and a pint of dark fetid pus issued from the Fallopian tube, with which the ovarian abscess communicated. The adhesions were torn away between the tube and ovary, and the latter removed. No ligature used, though there was some hemorrhage from a branch of the spermatic artery. The cavity of the tubular abscess was filled with lint, dipped in the yolk of an egg and in honey, with cataplasms over the whole, the external wound not being closed. The intestines were so strongly adherent to each other and to the peritoneum, as to retain their place without protrusion through the wound. She was very low until the sixteenth day, when cerebral symptoms arose, which ceased on the appearance of the menses. Suppuration from the abscess ceased the twentieth day; and she left the hospital, well, Feb. 20, the operation having been performed Jan. 5, 1782.

196. Lizars.³ — Age, twenty-nine; married; one child;

¹ Boston Med. and Surg. Jour. vol. lii. 1855.

² Mémoires de la Société Royale de Médecine, 1782, p. 296; also Lond. Med. Gaz. vol. xxxv.; Jeaffreson's Table; and Brit. and For. Med. Rev. October, 1843, p. 393.

³ Edin. Med. and Surg. Jour. 1824, vol. xxii.

in 1815, miscarried, and abdomen began to enlarge; in 1817, a lumbar abscess was opened in left groin, without diminution in size of abdomen; twice tapped for ovarian dropsy by competent physicians; menses continued, though painful. Operation, Oct. 24, 1823. Incision, two inches, from ensiform to pubes, and the uterus and ovaria found to be perfectly healthy! Sat up in bed fourteenth day, and, twenty-third day, went to the country. Great obesity, and distention of intestines, with anterior curvature of the lumbar vertebræ, are the reasons assigned for the error!

197. Lizars.¹ — Age, thirty-six; six years' growth. Incision, ensiform to pubes; a gallon and a half of ascitic fluid escaped (no adhesions apparently); ligature around the pedicle, afterwards transfixing the latter on the distal side to prevent slipping. The other ovary was also enlarged, adherent to parietes, brim of pelvis, and uterus, but was not disturbed. She recovered.

198. Lizars.¹ — Age, twenty-five; one year's growth. Operation, March 22, 1825. Incision, sternum to pubes; strongly adherent to parietes, colon, and brim of pelvis; ligature around pedicle, and, after division, three vessels tied separately; died, in fifty-six hours, of peritonitis.

199. Lizars.² — Magdalen Berry; age, thirty-four; single; six years' growth; irregularity and final cessation of catamenia. Operation, April 24, 1825. Incision, sternum to pubes; omental blood-vessels enormously enlarged, looking like placenta, and so adherent to the tumor as to require abandonment of the operation; tumor was incised, and found to be solid and cartilaginous; violent inflammation ensued; a hundred and sixteen ounces of blood were drawn in thirty-six hours, and opiates given freely; recovered, and lived twenty-five years; post mortem, fibrous tumor from the fundus uteri. Both ovaries small, and in their proper position.

¹ Edin. Med. and Surg. Jour. vol. xxiv. 1825.

² Ibid.; also Lond. and Edin. Monthly Jour. Med. Sciences, vol. i. 1851.

200. Larrey, Hyppolite.¹ — Age, thirty-three ; began after a third labor ; after various attacks of inflammation, spontaneous rupture took place a little below the umbilicus, and gave issue to pus and hair ; pus, hair, and fragments of bones, also escaped by the urethra. Operation, 1846. By abdominal incision, he removed a pediculated tumor ; found a fistulous communication existing with the bladder, through which, at the same time, a calculus was removed. In spite of an attack of confluent variola the fifteenth day, she eventually recovered.

201. Langenbeck.² — Age, thirty-four ; unmarried ; five years' growth ; size of full term. Incision, two inches and a quarter, just above symphysis ; cyst evacuated of nine quarts of clear, coagulable fluid ; no adhesions ; sac pulled out until the pedicle was clearly exposed ; incision closed by sutures ; then a double ligature through the pedicle, and another *through the pedicle and lips of the wound, to keep it from receding*, after which the pedicle was divided and tumor removed ; recovered in nine weeks, during which time was troubled with colicky pains.

202. Lyon.³ — Age, thirty-one ; unmarried ; two years' growth ; tapped three times. Operation, April 5, 1850. Incision, three inches, between pubes and umbilicus ; cysts evacuated ; incision enlarged a little, and adhesions separated by fingers ; sac drawn through, and ligature placed around the pedicle ; right ovary ; died next day.

203. Lane.⁴ — Operation, Nov. 19, 1843, Miss — ; age, twenty-eight ; no adhesions ; incision, five inches ; cyst removed ; recovered, and had children afterwards.

204. Lane.⁴ — Operation, Feb. 15, 1844. Mrs. L. ; age, forty-seven. Incision, eight inches ; firm adhesions ; cyst

¹ Revue Médicale, t. xcvi. p. 138.

² Lond. and Edin. Monthly Jour. vol. ii. 1854, from the Deutsche Klinik, 1853.

³ Ranking's Abstract, vol. i. 1853, from Glasgow Jour. of Medicine, July, 1853.

⁴ This and the following cases were communicated by Dr. Lane to Dr. Lee. (See Dr. Lee's Tables, loc. cit., also Mr. T. S. Lee's and Mr. Jeaffreson's Tables, for some of them.)

removed; recovered; died, two years after, of stricture of rectum.

205. Lane.¹ — Operation, Feb. 15, 1844. Mrs. —; age, forty-three; adhesions; long incision, seven inches; cyst partially removed; recovered; lived five or six years.

206. Lane.¹ — Operation, Nov. 21, 1844. Miss P.; age, twenty; no adhesions; cyst removed; recovered.

207. Lane.¹ — Operation, September, 1845. Mrs. W.; age, forty; large incision; universal adhesions; cyst mostly removed; a small portion left adherent to renal capsule; died, third day, of peritonitis.

208. Lane.¹ — Operation, 1845. Miss T.; age, thirty-nine; no adhesions; cyst removed; had pelvic abscess; recovered.

209. Lane.¹ — Operation, November, 1846. Miss A.; age, thirty-one; after incision, unable to remove the cyst (no reason given); recovered; died, two years after, from an attempt to produce suppuration in the cyst.

210. Lane.¹ — Operation, April 24, 1847. Mrs. P.; age, forty; solid tumors and ascites; small incision; operation abandoned from adhesions; recovered from operation in two days.

211. Lane.¹ — No date or name. Incision, from umbilicus to pubes, revealed a large, solid tumor, too much connected with the uterus for removal. She recovered from the operation, and was able to walk about, but died suddenly, five weeks after; post mortem, no cause of death was discovered, unless it were disease of heart; no signs of peritoneal inflammation. [Dr. Lee ranks this among the deaths, which is evidently wrong.]

212. Lane.¹ — Operation, Oct. 15, 1848. Miss D.; age, fifty-four; universal adhesions prevented the removal of the cysts, and the operation was abandoned; recovered; two years after, suppuration produced in three or four of the cysts; living in 1853.

¹ See last note on preceding page.

213. Lane.¹ — Operation, November, 1849. Miss H.; age, twenty-four; inflammation of the cyst produced, and followed by cure, though the tumor was not removed.

214. Litzenberg.² — Mrs. J. R.; two years' growth; tapped twice for diagnosis of adhesions. Operation, May 22, 1855. Incision, eighteen inches, through linea alba; universal adhesions; right ovary multilocular, holding three gallons; pedicle cut long, after passing a double ligature through it, and ligatures and stump *fastened in the external wound*; opium freely used, and rectum tube for flatulence; in twenty-two days after the operation, returned to her home, well, and wound closed.

215. McDowell, Kentucky.³ — Mrs. Crawford. Operation, December, 1809. Incision, on left side, three inches from and parallel to rectus, nine inches long; ligature around pedicle; tumor opened, and fifteen pounds of gelatinous substance removed; pedicle divided, and sac extirpated; whole weighed twenty-two pounds and a half; in five days, the report states, she was able to make her bed, and, in twenty-five days, she went home.

216. McDowell.³ — Negress. After three or four years of mercurial treatment, incision was made, as in previous case; adhesions to bladder and uterus preventing its removal, the tumor was incised, and gelatinous matter and a quart of blood escaped; recovered from the operation; in two years, the tumor was as large as ever.

217. McDowell.³ — Incision, in linea alba, an inch below umbilicus to within an inch of pubes; ligature around pedicle; incision extended two inches above umbilicus, and a "scirrhus ovarium," weighing six pounds, removed. She was well in two weeks, with exception of the ligature, which fell in five.

218. McDowell.³ — April 1, 1817. Incision as in last case;

¹ See last note on page 73.

² Western Lancet, March, 1856.

³ North-American Med. and Surg. Jour. vol. i. p. 35; and Am. Jour. of Med. Sciences, January, 1845, from Eclectic Repertory, 1817 and 1819.

ligature slipped, followed by profuse hemorrhage; vessels tied separately; some of them were cut through by the ligature; finally passed a ligature around the pedicle again, and stitched it down; recovered from the operation, but was not in good health afterwards.

219. McDowell.¹ — Negress; had been under the treatment of others for eighteen months, with supposed ascites; treatment continued a while; she was then tapped, and thirteen quarts of gelatinous fluid removed; in two months, tapped again, and then discovered the tumor; in a few months, was tapped the third time, when the incision was enlarged sufficiently to introduce a finger to settle the diagnosis; tapped a fourth time, shortly before the operation. Length of incision not mentioned; tied the pedicle, also a band of uterine adhesions, and removed the tumor; sixteen quarts of gelatinous fluid discharged from piliferous cyst of left ovary; died, in three days, of peritonitis.

220. Martini.² — Age, twenty-four; children; four times tapped, little fluid following; after last tapping, injected four pints of tepid alcohol and water, and inserted tent; the wound, however, seems to have closed immediately. Operation for removal. Incision of nine inches, and found a solid tumor, size of man's head, firmly adherent to bladder, rectum, and brim of pelvis; after removing a small sac from the surface of the tumor, containing a pound of serum, the operation was abandoned; large quantities of bloody serum escaped through a canula left at the lower angle of the wound; died, in thirty-six hours, from this serous waste and hemorrhage; left ovary.

221. Morgan.³ — Operation in Guy's Hospital, 1839. Age, twenty-six; small incision; adhesions; operation aban-

¹ North-American Med. and Surg. Jour. vol. i. p. 35; and Am. Jour. of Med. Sciences, January, 1845, from Eclectic Repertory, 1817 and 1819.

² Archives Générales, t. xx. 1829, p. 96, from Rust's Mag. and Lond. Med. Gaz. 1829.

³ Lancet, October, 1839, reported by Mr. Gorham; also Phillips's and Lee's Tables. This is the same as the "Guy's Hospital" case, so called.

doned ; died in forty-eight hours ; autopsy revealed a second cyst in connection with the first.

222. Mussey.¹ — Mrs. Sly ; age, forty ; thirteen children ; two years' duration ; menses uninfluenced by tumor ; left ovary. Operation, July, 1828. Incision, umbilicus to pubes ; mesocolon spread over tumor, and firmly adherent ; *transverse colon also crossed in front of tumor*, and firmly adherent to it, between umbilicus and pubes ; cyst tapped, four or five pints of turbid fluid drawn, and extirpation abandoned ; tent inserted, and, in a few days, discharge became purulent, and continued for three weeks ; then the opening closed, and, in a few weeks more, she was entirely well ; in a year, gave birth to fourteenth child. The adhesions of the deeper layers of the parietes were so imperfect as to necessitate the wearing of a laced waistcoat.

223. March.² — Mrs. P. ; age, forty-nine ; five children ; last, seven years old ; three years' growth. Operation, Dec. 18, 1849. Incision, four inches above navel to pubes, about twelve inches in all ; no adhesions ; cysts evacuated, and drawn through ; monocular sac of right ovary ; ligature around pedicle drawn with great force, and with assistance also of another person ; yet, after division of pedicle, the ligature became detached, with resulting hemorrhage from vessels, of the size of a crow-quill ; a double ligature was then passed through the pedicle, and, this being insufficient, a second one also, during which processes a pint of arterial blood escaped into abdomen ; in six hours, re-action was established with difficulty ; flatulence relieved by tube in rectum for some days ; recovered in thirty-four days ; weight estimated at eighteen pounds ; recommends carrying ligature into vagina.³

224. Miller, Kentucky.⁴ — Age, thirty-seven ; few months' growth [probably about one year] ; tapped previous week.

¹ Am. Jour. Med. Sciences, vol. xxi. 1827.

² Am. Jour. Med. Sciences, January, 1851.

³ See Handyside's case, No. 188.

⁴ Philadelphia Med. Examiner, September, 1848, from Western Jour. of Med. and Surg.

Operation, April 6, 1848. Incision, umbilicus to pubes ; adhesions ; two of the cysts tapped to reduce the size ; tumor drawn out, and single ligature passed through pedicle ; tumor removed, and remaining vessels of broad ligament secured separately ; weight, nine pounds and a quarter ; last ligature came away thirty-first day ; recovered.

225. Meeker, Indiana.¹ — Mrs. S. ; age, thirty-two ; two years' growth ; had also right inguinal hernia ; tapped repeatedly ; great pain ; hectic ; night-sweats. Incision, ensiform to pubes, twenty-one inches ; extensive adhesions ; some ascitic fluid ; right ovary ; double ligature through pedicle ; died, in six hours, of hemorrhage from pedicle, one half of ligature having slipped ; weight, forty pounds eight ounces.

226. McRuer.² — Mrs. Rafferty ; age, twenty-eight ; three children ; fifteen months' growth, following parturition ; tapped one month previously ; greatly distended ; vaginal prolapsus. Operation, Jan. 20, 1853. Incision, ensiform to pubes ; adhesions to omentum ; cyst evacuated ; double ligature through pedicle, and several to omental vessels ; no bad symptoms ; wound healed, and able to sit up half a day at end of three weeks.

227. Mercier.³ — Age, twenty-eight ; four children ; last, three years since ; has had ascites, supposed to depend on ovaritis ; one year's growth ; menses ceased ; tapped seven times in six months, five or six gallons each time ; diagnosis lay between extra-uterine pregnancy and encysted ovary. Operation, Dec. 17, 1854. Incision, nine inches, from lower ribs to external edge of rectus muscle ; strong adhesions ; tumor evacuated by incisions, turned out, and ligatured around pedicle ; weight, six pounds ; fibro-cartilaginous ; ligature fell thirteenth day ; and at time of report, seventeenth day, was sitting up.

¹ Boston Med. and. Surg. Jour. vol. xxxix. 1848.

² Boston Med. and. Sur. Jour. February, 1853.

³ Glasgow Med. Jour. October, 1855, from New-Orleans Med. and Surg. Jour. January, 1855.

228. Morris.¹ — Operation, 1843. Long incision; cyst removed; recovered.

229. Mott, New York.² — Mrs. —; circus-rider; age, thirty-five; left ovary encysted; malignant; portion of tumor adherent in pelvis, and could not be removed; death, third day, from peritonitis.

230. Mott, New York.² — Miss —; maiden; forty; pedunculated; non-adherent; fibrous tumor of the ovary; good case in every respect; death, fifth day, of peritonitis.

231. Norman.³ — Age, twenty-three; vaginal prolapsus; menses regular; had used iodine internally and externally. Operation, Nov. 8, 1850. Incision, five inches; *small intestine adherent for two inches on anterior face of the tumor*, and general adhesions to surrounding parts. Operation abandoned; recovered in three weeks; in a fortnight, tumor began to decrease, supposed from obliteration of nutrient vessels, in consequence of inflammation excited by the operation. — [See Tanner's proposal, p. 27.]

232. Phillips.⁴ — Age, twenty-three; nine months' growth. Operation, Sept. 9, 1840. Incision, one inch and a half; sac emptied of three hundred and thirty ounces of glairy fluid; sac very thick; external incision enlarged to two inches and a half; no adhesions; ligature around pedicle (which was formed by Fallopian tube), and cut close; died, fourth day, of exhausting diarrhœa. Right ovary removed; left also diseased.

233. Potter.⁵ — Age, thirty-six; married; one child; menses ceased past two months; two tumors, one on each side; one of them, of six years' growth, had been tapped, and three quarts jelly-like fluid drawn; auscultation revealed friction sound on left, none on right side. Operation, March

¹ From Jeaffreson's, Phillips's, Dr. Lee's, and T. S. Lee's Tables.

² Communicated by Dr. Van Buren. (See note to No. 281.)

³ Am. Jour. Med. Sciences, April, 1851, from Brit. Prov. Med. and Surg. Jour.

⁴ Lond. Med. Gaz. vol. xxvii. 1840; and his Tables, in Med. Chir. Trans.

⁵ Lond. Med. Gaz. vol. xli. 1848.

21, 1848. Incision, ensiform to pubes ; general adhesions ; ligature through pedicle of left ovarian cyst, and arteries tied also ; the right tumor, very adherent, was tapped and evacuated, ligatured as low down as possible, and upper two-thirds cut away ; ligature slipped, but the vessel was soon secured ; fourth day, wound united ; separated again, however, and she died, sixteenth day, of peritonitis.

234. Peaslee.¹—Age, twenty-five ; single ; fifteen months' growth ; left ovary ; menses regular ; feeble and emaciated ; has had hydragogues, diuretics, and iodine ointment ; tapped ten days previously. Operation, Sept. 21, 1850. Incision, nine inches, beginning two inches above umbilicus ; slight adhesions ; sac evacuated, double ligature through its pedicle ; and, after its removal, a cyst of the right ovary was discovered, the size of a pullet's egg ; after passing a double ligature through its pedicle, it also was removed ; last ligatures came away in two months ; in seventy-two hours, the menses returned for three days, supposed to be merely uterine hemorrhage from congestion, in consequence of the operation. She was a niece, by marriage, of N. Smith's patient.

235. Peaslee.²—Age, twenty-six ; four years' growth ; has been subjected to salivation ; iodide of potass., and bandaging ; tapped eight times in fifteen months, and, in one case, nearly thirteen gallons of ascitic fluid drawn ; tumor recognized after first tapping ; menses irregular ; there was vaginal protrusion, and the last threeappings were in this situation ; at the last tapping, three days before operation, the canula was left in. Operation, Feb. 12, 1855. Incision, eleven inches ; slight adhesions to omentum divided, *one of them containing a small artery* ; double ligature through pedicle of right ovary ; ligatures of omental vessel brought out of the wound ; those from the pedicle were carried, by side of

¹ Am. Jour. Med. Sciences, April, 1851 ; and Boston Med. and Surg. Jour. July, 1851.

² Am. Jour. of Med. Sciences, January, 1856.

canula, into vagina; peritonitis followed, and, the sixth day, there was dark, fetid suppuration; a quart of "artificial serum"¹ was injected repeatedly for several days, with great relief each time; the fetid discharge continued for three weeks; wound healed in six weeks; menses had not returned at end of nine months.

236. Peaslee.² — Age, thirty-five; widow; four children; eighteen months' growth, following parturition; diagnosis, non-adherent cyst of *right* ovary. Operation, September, 1853. Incision, four inches, exposed what was taken for a dense sac; but, on puncture, a few drops of blood only appeared, and it proved to be continuous with fundus uteri; owing to bleeding from the puncture, the operation could not be abandoned; the incision was extended, a double ligature passed through the attenuated lower portion of the organ, which, with the *left ovary*, was removed; died, in five days, of peritonitis; fibrous tumor of uterus. The fluctuation was very deceptive, even after the tumor was exposed.³

237. Prince.⁴ — Age, twenty-five; married; eighteen months' growth; had children; menses irregular. Operation, Dec. 25, 1847. Incision, three inches, below umbilicus; adhesions; solid tumor of right ovary; extirpation abandoned; tumor incised, and part of its internal portions removed; but slightly vascular; tent inserted; purulent discharge continued a long time; eventually recovered, and gave birth to a child, April 10, 1849.

238. Prince.⁵ — Mrs. Simpson; age, forty; sterile; four years' growth; menses "never materially deranged;" diagnosis, ovarian tumor, probably solid in whole or in part. Operation. Incision, two inches, between umbilicus and pubes; tumor tapped, a few drops of blood only issuing, though pierced in various directions, the substance breaking

¹ Alb. ovi, 3 vj; sod. chlorid., 3 iv; aquæ, Ovj.

² Am. Jour. Med. Sciences, April, 1855.

³ See Parkman's case.

⁴ Am. Jour. Med. Sciences, July, 1850.

⁵ Am. Jour. Med. Sciences, October, 1852.

down with a crackling sound ; was also cut into, and torn by the finger ; tent introduced, in hope of destroying the tumor by suppuration, as in his other case ; very comfortable for four days ; fifth day, sudden prostration and death ; post mortem revealed a *large pediculated tumor of the spleen*, loosely adherent, anteriorly, to the abdominal parietes ; uterus and ovaries normal ; no peritonitis ; immediate cause of death not recognized. It is proper to state, that the error of diagnosis was due, in a great measure, to the imperfect or inaccurate information given by the patient as to the history of its growth in the earlier stages.

239. Parkman, S.¹ — Age, twenty-seven ; single ; one year's growth ; menses regular. Operation, Jan. 8, 1848 ; had been previously tapped by her surgeon in the country, no fluid following. Incision, from half way between ensiform and umbilicus, to pubes ; ascitic fluid escaped ; tumor tapped, no fluid came ; no adhesions ; on being then raised, found to be a fibrous growth, involving the entire fundus of the uterus ; ligatures through and around the lower part of this organ, and drawn with great force ; died, in twelve hours, of hemorrhage from contraction of the tissues enclosed in ligatures ; both ovaries sound, and tumor weighed eight pounds thirteen ounces. The fluctuation was very deceptive, even after its removal.

240. Parkman.² — Mrs. D. ; age, forty-one ; married twice ; two children ; two miscarriages ; menses regular ; eighteen months' growth. Tapped for diagnosis before operation, which was performed Aug. 30, 1851. Incision, umbilicus to pubes ; no adhesions ; operation abandoned, as no pedicle was found ! From the report, I presume that the broad ligament was spread out over and adherent to the base of the cyst. Recovered from operation without a bad symptom ; two months after, there was an evident appearance of refilling of the cyst.

¹ Am. Jour. Med. Sciences, April, 1848.

² Boston Med. and Surg. Jour. December, 1851.

241. Page.¹ — Agnes G.; age, thirty-three; married; two children; one miscarriage, six years since; two years' growth; menses regularly every three weeks since tumor began. Operation, Aug. 19, 1844. Tentative incision, two inches; ascitic fluid escaped; incision extended to four inches; cyst evacuated, and drawn out; no adhesions; ligature around pedicle fell in twelve weeks; weight, five pounds and a half; menses regular since operation.

242. Page.² — Catharine McC.; age, thirty-nine; married; nine children, six of them still-born; last, seven years ago; fifteen months' growth, following menstrual suppression from exposure to cold; menses returned last three months; *tumor movable*. Operation, July 27, 1846. Tentative incision, an inch and a half; ascitic fluid escaped; incision extended to two inches and a half and three inches; cyst evacuated, drawn partly out, and found to be firmly adherent to several inches of intestine, and its "*extended base*" very adherent to surrounding parts; extirpation was abandoned, and most of the sac included in a ligature and removed, leaving the base behind; after great suffering, died, in thirty-six hours, of hemorrhage from the partially detached ligature; most of the adhesions were posterior, hence its movability.

243. Paget.³ — Age, twenty-four; one child; tapped twenty-five days before. Operation, 1850. Incision, three inches; sac seized, but ruptured, and five gallons of pure pus escaped; universally adherent; edges fastened to the external wound, and the operation abandoned; died in ninety-six hours.

244. Quittenbaum, or Kittenbaum.⁴ — Tapped twice in seven weeks; long incision; well tenth day.

245. Rogers, D. L., New York.⁵ — Age, twenty; single;

¹ Lancet, vol. i. 1845.

² Lancet, vol. ii. 1846.

³ Dr. Lee's Tables, from the operator.

⁴ Revue Médicale, 1836, t. lx. p. 244; and Brit. and For. Med. Rev. 1843, p. 395.

⁵ New-York Med. and Physical Jour. vol. ix. 1830; and Lond. Med. Gaz. 1829.

tapped seven times, and eighteen gallons removed; tumor discovered after sixth tapping; two years' growth, commencing with suppression of menses; had been accused of pregnancy. Operation, Sept. 14, 1829, after removal of two gallons gelatinous fluid (seventh tapping). Incision was made from ensiform to pubes; thickened sac found, filling abdomen, and so closely adherent that portions of peritoneum were removed; two hours' dissection; ligatures cut close; solid and cystic, three pounds and a half; in two weeks, sitting up; in four weeks, wound healed; and, in six weeks, menses had returned, and she was well.

246. Ritter, reported by Ehrhartstein.¹ — Agathe Duerr; age, thirty-one; five children; began during fifth pregnancy, abdomen not subsiding after delivery; fluctuation in *left* iliac region. Ritter was then consulted, and diagnosed extra-uterine pregnancy and ascites; tapped twice, and tumor found to be in *right* ovary. Operation, eighteen weeks after delivery. Incision appears to have been transverse, dividing the rectus, and turning it down; large incision; peritoneum opened enough to introduce the hand, and, though adherent, tumor was removed in fifteen minutes; three ligatures to bleeding vessels; nothing said of pedicle; peritonitis ensued, and, the eighth day, there was an abundant discharge from the wound; the lacteal secretion ceased for six or seven weeks, the peritoneal secretion becoming milky; recovered in nine weeks; lardaceous tumor of right ovary, twelve pounds.

247. Smith, Nathan.² — Age, thirty-three; seven years' growth; married; five children, three of them since discovery of tumor; ruptured spontaneously three times, — twice during pregnancy, and once from a fall; right ovary. Operation, July 5, 1821,³ youngest child ten months old, and

¹ Archives Générales, t. i. 1833, p. 427; and Brit. and For. Med. Rev. October, 1843, p. 395; also Med. Chir. Rev. July, 1833.

² Med. and Surg. Memoirs of, edited by his son, Baltimore, 1831; also Edin. Med. and Surg. Jour. v. 18, p. 532.

³ Dr. Peaslee says that he was told, by one present at the operation, that it was July, 1820. (See Am. Jour. Med. Sciences, April, 1851.) The original report in Edin. Jour., above cited, says 1821.

nursing at the time. Incision, below umbilicus, three inches long; sac emptied of eight pounds of fluid; sac drawn through; adhesions to epiploon separated with knife; skin ligatures to two omental arteries, and, after division of pedicle, two more ligatures; adhesions to abdominal parietes separated by knife and fingers; no bad symptoms; recovered in three weeks.

248. Smith, Nathan.¹ — Operation previous to above. After incision, the uterus was found to be involved, and to constitute the largest part of the tumor; operation abandoned. [I presume she recovered, as nothing is said to the contrary.]

249. Smith, Nathan.¹ — Sac exposed by incision; had been tapped previously two or three times; punctured, and contents discharged; adhesions so extensive that the wound was closed; after slight peritonitis, it healed; in three or four weeks, the sac refilled, the ascitic fluid re-accumulated, and the patient died. [I have put this down as *recovery* from the *operation*.]

250. Southam.² — Age, thirty-seven; five children; two years' growth, following parturition; menses regular. Operation, Oct. 12, 1843. Incision, nine inches; one gallon ascitic fluid escaped; adhesions to omentum; left ovary; double ligature through pedicle; able to walk about room in one month; ligatures slipped into abdomen, and could not afterwards be found; cystic sarcoma of left ovary, weighing four pounds twelve ounces. She continued well, January, 1847.

251. Southam.³ — Age, thirty-eight; married; left ovary; eight years' growth. Tentative incision; no adhesions found, and incision enlarged to six or seven inches; sac evacuated, and ligature around pedicle; thirteenth day, moved a distance

¹ Med. and Surg. Memoirs of, Baltimore, 1831, p. 231.

² Lond. Med. Gaz. vol. xxxiii.; and Brit. and For. Med. Rev. January, 1847, p. 297.

³ Lond. Med. Gaz. vol. xxxvii. from British Prov. Med. and Surg. Jour. 1845.

of three miles ; ligature came away forty-ninth day ; unilocular cyst, thirty-one pounds.

252. Southam.¹ — Age, twenty-six ; married ; five children ; youngest, thirteen months old ; tumor, ten months' growth. Tentative incision, three inches, enlarged above and below ; fibrous and cerebriiform tumor removed, weighing nine pounds ; ovary not mentioned ; died seventh day ; lower lobes of lungs inflamed. [I have entered this as pneumonia.]

253. Southam.² — Exploratory operation, intending to leave permanent opening if extirpation was found impracticable from adhesions. This proved to be the case. Recovered from the exploratory incision without a bad symptom. The alternative operation, however, was fatal, suppuration of the cyst (which was multilocular) causing violent irritative fever. [Dr. Lee reports this as fatal. I have done so in the table of cases of "permanent opening ;" but here it ought to be recovery from an operation abandoned.]

254. Solly, S.³ — Age, twenty-four ; unmarried ; menses at sixteen, and always regular ; period of growth not stated. Operation, June, 1, 1846. Incision, three inches ; sac evacuated, and drawn through ; no adhesions ; double ligature through pedicle of right ovary, tied firmly ; died, of hemorrhage, in eleven hours ; left ovary found to be enlarged.

255. Smith, Henry.⁴ — M. W. ; age, twenty-three ; prostitute ; seduced at fourteen ; four children ; now size of six months of pregnancy ; no anasarca ; pain in left iliac region. Operation, 1854. Incision, eight inches, umbilicus to pubes, and ovaries found to be sound ! Swelling due to thickened and indurated omentum ; recovered in twenty-one days.

256. Stilling.⁵ — Age, twenty-two ; single ; three and a half years' growth. Operation, April, 1841. Incision, four

¹ Lond. Med. Gaz. vol. xl. 1847, from Trans. of British Prov. Med. and Surg. Assoc. vol. iii.

² Dr. Lee's Table.

³ Lond. Med. Gaz. vol. xxxviii.

⁴ Phil. Med. Examiner, January, 1855.

⁵ Brit. and For. Med. Rev. vol. xiii. p. 547, from Hannoversche Annalen, 1841.

inches ; tumor punctured and evacuated ; incision enlarged to six inches ; no adhesions ; tumor of right ovary drawn through ; ligature around pedicle ; died, in three days, of hemorrhage from pedicle.

257. Smith, Protheroe.¹ — Age, thirty-nine ; complicated with chronic peritonitis ; large incision ; no adhesions ; multilocular ; twenty pounds solid, ten fluid ; died, in four hours, of shock. Operation, 1846.

258. Stockwell, F. G.² — Hannah Hiscox ; age, twenty ; two years' growth ; right ovary (?). Incision, from umbilicus to an inch and a half above pubes ; sac evacuated, pedicle tied, and tumor removed ; died in three days.

259. Smith, Alban G.³ — Age, thirty ; two children ; menses regular. Operation, May 24, 1823. Incision, umbilicus to within one inch of pubes ; no adhesions ; sac emptied of several pints of "watery matter," and, with some difficulty, extracted ; ligature around the pedicle ; right ovary of "scirrhus appearance," and containing a quantity of bony matter ; menses returned profusely in five days ; ligature came away twenty-fifth day ; has been well since, except for pain in loins and abdomen during menstrual periods.

260. A. G. Smith.⁴ — Case successful.

261. A. G. Smith.⁴ — Patient died of secondary hemorrhage, from relaxation of the ligature, some days after operation.

262. A. G. Smith and McDowell.⁴ — Patient had ascites, for which she had tapped herself ninety times. Both considered the diagnosis as certain ; but, on opening the abdomen, no ovarian tumor was found, a mass of intestines only, conglomerated by adhesions. She died.

263. Tanner.⁵ — Mary Ann H. ; age, fifty-six ; single ;

¹ Mr. T. S. Lee's Tables, loc. cit. p. 271.

² Dr. R. Lee's Tables, from Brit. Prov. Med. and Surg. Jour. 1851.

³ North-American Med. and Surg. Jour. vol. i. 1826.

⁴ Appendix to Cooper's Surg. Dictionary ; note by editor, who reports it as "Goldsmith;" see also Foltz's article, New-York Jour. of Med. September, 1843.

⁵ Lancet, vol. ii. 1852.

menses ceased eleven years ago, the abdomen enlarging ever since; treated with iodine, mercurials, &c.; March 1, 1852, two pailfuls drawn by tapping; then bandaged tightly, and iodine and mercurials resumed; in six weeks, as large as ever. Operation, April 22, 1852. Incision, three inches (afterwards enlarged a little); cyst evacuated, and drawn out; ligature around pedicle, and, after its division, another was required; right ovary; left her bed in eighteen days; ligature came away in one month, and she was well in about six weeks.

264. Tannier.¹ — Mary S.; age, forty-six; married for twenty-four years; never pregnant; menses irregular since marriage; enlarging for eight months, consequent upon a sprain; tapped six months ago. Operation, March 15, 1853. Incision, below umbilicus, three inches, afterwards enlarged; adhesions; tapped, two pints only drawn, tumor being chiefly solid; some hemorrhage on removing tumor; ligature around pedicle; malignant tumor in the left broad ligament; the ovary attached to it healthy; menses second day; died, in five and a half days, of peritonitis.

265. Teale.² — M. C.; age, twenty-one; single; menses ceased eighteen months ago, at which time the disease began; tapped five times in past nine months. Operation, April 3, 1854. Incision, four inches (afterwards enlarged a little); adhesions only where formerly tapped; multilocular tumor of right ovary removed; double ligature through pedicle; *ligatures, and stump of pedicle, fastened to external surface of wound*; died, in twenty-two hours, of hemorrhage, probably from some small omental vessels, which did not bleed at time of operation. In this case, *the transverse colon was firmly adherent to front wall of abdomen!*

266. Trowbridge.³ — Mrs. H.; age, twenty-two; one child; right ovary; two years' growth, following parturition;

¹ Med. Times and Gaz. April, 1853.

² Ranking's Abstract, vol. xxi. 1855, from Med. Times and Gaz. July, 1854.

³ Boston Med. Intelligencer, vol. v. 1827, p. 337.

became pregnant, and miscarried, during its growth. Operation, April 20, 1827. Incision, oblique, four inches; sac emptied of seven pounds of pus, and, owing to adhesions, its extirpation abandoned; dilated puncture, and inserted a tent of lint; third day, peritonitis; fourth day, free suppuration; seventh day, removed tent, and inserted a tube; the next day, a pint of fetid matter escaped, and he injected a tea-cup full of warm port-wine and water; recovered in fifteen days, and bore a child two years after;¹ recommends free incision, and partial or entire extirpation of cyst.

267. Trowbridge.²—Age, twenty; unmarried; supposed by friends to be pregnant; after tapping, a hardness was felt on left side, and supposed to be encysted ovary. Operation. Oblique incision, from linea alba, three inches long; on division of peritoneum, four quarts of ascitic fluid were discharged, and no diseased ovary was to be found! He confesses, with frankness, that “here was an entire mistake.” It was chronic peritonitis; and the hardness on the left side was “enlargement of the colon, and thickening of its coats.” The discharge of fluid continued for several weeks, and she entirely recovered.

268. Trufram.³—Operation, 1844. Age, eighteen; short incision; no adhesions; cystic; removed; recovered.

269. Unknown, reported by Dr. Sargent, of Worcester.⁴—Age, thirty-four; single; over eight years’ growth. Incision, to the right of and below the umbilicus; operation abandoned on account of adhesions; died, in three days, of peritonitis; name of surgeon not given. She was tapped before the operation; and a pint of blood was said to have flowed through the canula before its removal. After death, it was found that the uterus had been perforated by the trocar! Fibrous disease of both ovaries, weighing forty-six and

¹ Boston Med. and Surg. Jour. vol. xxv. 1841.

² Boston Med. and Surg. Jour. August, 1841.

³ Mr. Walne’s Table, in Ashwell on “Dis. of Women,” p. 667.

⁴ Records of the Boston Society for Medical Improvement, May, 1854, vol. ii. p. 92.

a half pounds; and they were adherent to each other and to the intestines.

270. Unknown, from Froriep's Notizen, vol. xiv.¹ — Age, forty-eight; one year's growth; tapped six times. Long incision; adhesions; part of sac removed; tumor could not be wholly removed, owing to its broad base, and attachments to os innominatum; died, sixth day, with tetanic symptoms.

271. Unknown.² — A. B. Large incision; adhesions; not removed; died.

272. Unknown.² — C. D.; age, twenty-two. Small incision; no tumor; recovered.

273. Unknown.² — E. F. Large incision; adhesions; death.

274. Unknown.² — G. H. Death; no details.

275. Unknown, reported by Mr. Hargraves.³ — After discharging five pints of dark grumous matter, the sac was found to be very much thickened, adherent, and complicated with a tumor the size of a child's head at birth; died in five days; the tumor was not removed.

276, 277, 278, 279. Unknown.⁴ — These cases were all fatal. They were communicated to Dr. Lee confidentially, and never published. I give them on his authority.

280. Unknown.⁵ — Mr. W. B-k-s-w. Long incision; no adhesions; died, sixth day, of peritonitis. Mr. Lee says, in a note, p. 270, "This case has not been published, but was related to me by the nurse who was present at the operation; also at the office for the registry of deaths."

¹ Jeaffreson's, Churchill's, and Phillips's Tables; also Brit. and For. Med. Rev. October, 1843, p. 392.

² Mr. Phillips's Table. These four cases I am doubtful of, as, on page 482, he mentions Gooch's name in connection with one of them; and I think it possible that they are repetitions of other cases. Dr. R. Lee and Mr. T. S. Lee admit them.

³ Dr. Lee's Table, No. 17.

⁴ Dr. Lee's Tables, Nos. 146, 147, 148, 149.

⁵ T. S. Lee's Tables, No. 71, p. 268.

281. Van Buren, New York.¹ — Age, twenty-one; five years' growth; never menstruated; procidentia uteri. Operation, Nov. 1, 1849. Incision, twelve inches; omentum adherent, and, after separation, required three ligatures, which were cut short; five ligatures were required for vessels in left broad ligament after dissection; *peritoneum dissected from pedicle to allow application of ligature*; pedicle then tied in such a way as to allow of the removal of the ligature in the broad ligament. Fibrous tumor of left ovary, weighing seven pounds. Recovered. The last ligature came away nineteenth day; since married, and in good health; menses appeared a month after the operation, and continue regular.²

282. Van Buren.³ — Age, forty-five; married; seven years' growth; four children, last born twelve years ago; first five years, menses regular; last two years, a continuous discharge from the uterus; protrusion of vagina and posterior wall of bladder, *caused by the pressure of a bandage* which had been applied. Operation, Nov. 12, 1851. Incision, nine inches, and tumor turned out; adhesions to mesentery, requiring, on division, six ligatures, which were cut close; the pedicle contained largely dilated veins, one of which gave way under the ligature, and twelve ounces were lost; finally secured, and tumor removed; died, in thirty-nine hours, of peritonitis. Encephaloid tumor of left ovary, weighing eight pounds.

283. Veaullegeard.⁴ — T. R.; age, twenty-five; menses at eighteen; five years' growth; menses irregular; tapped

¹ New-York Jour. of Med. March, 1850. In the same article, Dr. Van Buren alludes to three fatal cases, occurring in New York, which were never recorded. Through his kindness in communicating the facts, and his authorities therefor (which are unquestionable), I am enabled to give these three cases; and also an additional one, which has occurred within the past few months. (See Synopsis, 29, 30, Anonymous.) Two of them (see 229, 230) are given with the full permission of the operator, Dr. Mott. The operators in the other two (29, 30) seem unwilling to give either the details, or permission to publish their names.

² Same Jour. March, 1851.

³ New-York Jour. of Med. March, 1852.

⁴ Monthly Retrospect of Med. Sciences, vol. i. 1848, p. 173, reported by Dr. McCarthy. I suppose the same as Mr. Atlee's case of Vaugirard (195).

fifty-two times in three years. Operation, Sept. 15, 1847. Incision, seven inches; tumor incised, and its serous and puriform contents discharged; two ligatures around pedicle; left ovary, eighteen pounds, half fluid, half solid; ligatures came away sixteenth day, and in twenty-five days she was well.

284. Warren, J. C.¹ — C. W.; age, forty; single; menses profuse. Operation, November, 1830. Incision, twelve inches; and scirrhus tumor, weighing twenty-five pounds, removed. Owing to the extreme shortness of the pedicle, the ligature slipped; and she sank from hemorrhage from the numerous vessels, notwithstanding they were secured as fast as possible.

285. Walne.² — Mrs. F.; age, fifty-eight; five children, and miscarried several times; menses ceased four years ago; two years' growth; tentative incision of an inch and a half to ascertain as to existence of adhesions; extended from ensiform to pubes nearly, thirteen inches long; right ovary, weighing sixteen pounds; no adhesions; double ligature through pedicle, an artery tied on face of stump, and, finally, another ligature carried around pedicle; seventeenth day, sat up; twenty-third day, wound healed, except for ligatures; the ligatures escaped into cavity, but re-appeared again. Operation, Nov. 6, 1842. Ligatures came away Jan. 10.³

286. Walne.⁴ — Age, fifty-seven; widow; never pregnant; left ovary. Operation, May 30, 1843. Tentative incision, an inch and a half, and, finding no adhesions, extended it to twelve inches, between ensiform and pubes; ligature through pedicle broke; second one around; after division, there was hemorrhage, suppressed by another ligature around whole pedicle; recovered, after attack of phlebitis;

¹ Warren on Tumors, 589.

² Lond. Med. Gaz. vol. xxxi. 1843; and Brit. and For. Med. Rev. October, 1843; also Ashwell on Female Diseases, p. 660.

³ See note, p. 572, of Gazette.

⁴ Lond. Med. Gaz. vol. xxxii.; and Brit. and For. Med. Rev. October, 1843, p. 402; and Ashwell, loc. cit. p. 667.

weight, sixteen and three-quarter pounds ; ligature fell in five weeks.

287. Walne.¹ — Age, twenty ; unmarried ; menses at fourteen, which continue regular ; increased size, apparent at sixteen (patient herself thinks it began, in an attack of inflammation, at eleven) ; health good ; size of full term of pregnancy. Operation, Sept. 12, 1843. Tentative incision, an inch and a half, extended to fourteen inches, between ensiform and pubes ; no adhesions ; left ovary ; double ligature through pedicle ; weight, twenty-eight pounds ; catamenia, fourth day ; seventeenth day, walked across room.

288. Walne.² — Age, fifty-four ; five children, youngest fourteen years old ; menses ceased at forty ; four years' growth ; tapped three times. Operation, Oct. 11, 1843. Tentative incision, five inches, and operation abandoned owing to extensive adhesions ; recovered from operation ; tapped afterwards.

289. Walne.³ — Age, forty-five ; tapped many times. Operation, Oct. 19, 1843. Tentative incision, of two inches, revealed an ovarian tumor, floating in ascitic fluid ; incision extended to fifteen inches ; left ovary ; double ligature through pedicle. There was also a large fibrous tumor of uterus, which was not removed. Five gallons of ascitic fluid were collected, and the ovarian tumor removed ; weighed fourteen pounds, five of which were solid, the rest gelatinous, and contained in cysts ; died, in nine days, of peritonitis. [In Ashwell, the age is given as twenty-one ; but, as the other accounts all say forty-five, I presume it to be a misprint.]

290. Walne.⁴ — No date. "Long incision ; extensive and strong adhesions, which were violently torn up ; communicated to Dr. Lee by a personal friend, who was present at the operation ; death speedily followed." Unpublished.

¹ Lond. Med. Gaz. vol. xxxiii. 1844 ; and Ashwell, loc. cit. p. 667.

² Lond. Med. Gaz. vol. xxxiii. 1844 ; and Ashwell, p. 668.

³ Lond. Med. Gaz. vol. xxxiii. 1844.

⁴ Dr. R. Lee's Tables, loc. cit. No. 108.

291. Walne.¹ — Miss D. ; age, thirty ; three years' growth. Operation, April 22, 1844. Tentative incision, one inch, extended to three inches, and twenty-four pints escaped from the sac ; operation abandoned [he gives no reason] ; the patient recovered, but the sac filled again. She afterwards married, and bore two children [from which it is fair to infer that she recovered, not only from the operation, but the disease also].

292. West.² — Mrs. H. ; age, forty-five ; three children ; thirteen years' duration. Operation, Nov. 2, 1837. Incision, two inches, below umbilicus ; cyst emptied of twenty pints, and drawn out ; ligature around pedicle cut close ; the wound healed in four days, and she rapidly recovered.

293. West.³ — Miss S. ; age, twenty-three ; no details ; cyst removed ; recovered.

294. West.³ — Mrs. Tomkins ; age, forty ; cyst previously tapped ; adhesions, and operation abandoned in consequence ; recovered from operation, and tapped seventeen times since.

295. West.³ — A. M. ; age, twenty-four ; cyst tapped repeatedly ; removed ; died.

296. Webster.⁴ — Operation, 1844. Age, thirty-seven ; large incision ; operation abandoned on account of adhesions ; recovered rapidly from the operation, though the peritoneal cavity was exposed for two hours ; but she died from the disease in about two months.

297. Woyeikowski.⁵ — Age, forty ; three children ; menses ceased fifteen months ; was called for supposed labor ; had some pain before his arrival, and a protrusion from the vulva of a tumor, which proved to be the uterus, three times its normal size, and admitting a finger into the os. Being irreduc-

¹ Dr. R. Lee's Tables, No. 114, communicated by Dr. Hogg, who was present at the operation ; unpublished.

² *Lancet*, vol. i. 1837-38, p. 307.

³ *Lancet*, October, 1839, reported by Mr. Gorham.

⁴ *Trans. Am. Med. Assoc.* vol. iv. 1851 ; Atlee's Table.

⁵ *Lond. and Edin. Monthly Jour.* June, 1847, from *Jour. de Méd. et de Chirurg. Pratique*, April, 1847 ; also *Am. Jour. Med. Sciences*, October, 1847.

ble, the abdomen, which was distended with fluid, was tapped, and thirty-five quarts of transparent, inodorous fluid drawn from peritoneum ; after which a tumor, the size of a man's head, was found floating in abdomen. The uterus was now reduced ; and the next day, April 28, 1844, operated. Large incision, three inches above umbilicus to pubes, and a lardaceous tumor of right ovary, containing purulent collections, removed, weighing six and a half pounds ; no bad symptoms ; able to walk home twenty-fifth day ; one child in thirteen months, and in December, 1846, another.

298, 299, 300. Woodward¹ gives three cases, one of which was operated by Dr. Chamberlain ; all fatal. In Chamberlain's case, death followed in two days.

¹ Western Lancet, March, 1856.

TABLE OF THREE HUNDRED CASES OF OPERA-

ARRANGED FROM THE

Number.	Operator.	Date of Operation.	Age.	Married or Single.		Ovary removed		Both diseased.	Duration at Time of Operation.	Catamenia.	Previous Tappings.	Kind of Incision.		Adhesions.	Removed.		Partially removed.
				M.	S.	R.	L.					s.	l.		None.	Yes.		No.
1	Anderson . .	Sept. 1848	34	1	.	.	.	*	2½ yr.	.	2	1	.	Extensive	.	1	.
2	Arnott . . .	. . . 1848	23	.	.	.	.	.	.	.	.	1	.	do.	.	1	.
3	Arrowsmith .	. . . 1846	24	.	.	.	.	.	.	.	1	1	.	do.	.	1	.
4	Atlee, J. L. .	June, 1843	25	.	1	1	1	*	7 yr.	Irregular . .	6	.	1	1 adherent	1	.	.
5	do. do. . .	. . . 1846	33	.	.	.	.	.	.	.	.	.	1	Adhesions	1	.	.
6	Atlee, W. L. .	Mar. 1844	61	1	.	.	1	*	21 yr.	.	2	1	1	.	1	.	.
7	do. do. . .	Mar. 1849	29	1	.	1	.	.	3 yr.	.	1	.	1	Adhesions	1	.	.
8	do. do. . .	May, 1849	33	.	1	.	.	*	4 yr.	Irregular . .	1	.	1	.	.	1	.
9	do. do. . .	June, 1849	25	1	*	1	.	.	4 yr.	Regular . . .	.	.	1	Adhesions	1	.	.
10	do. do. . .	Feb. 1850	30	.	1	.	.	.	.	.	.	.	1	Extensive	1	.	.
11	do. do. . .	Feb. 1850	48	1	.	.	.	.	.	.	.	.	1	Adhesions	.	.	*
12	do. do. . .	Mar. 1850	40	1	.	.	.	.	.	.	5	.	1	do.	1	.	.
13	do. do. . .	June, 1850	37	1	.	.	.	.	.	.	.	.	1	do.	.	.	*
14	do. do. . .	July, 1850	42	1	.	.	.	.	.	.	.	.	1	General	.	.	*
15	do. do. . .	Nov. 1850	28	1	.	.	.	.	.	.	16	.	1	Adhesions	1	.	.
16	do. do. . .	April, 1851	29	1	.	.	.	.	.	.	.	.	1	Firm	1	.	.
17	do. do. . .	Jan. 1852	68	1	.	.	.	.	.	.	.	.	1	Adhesions	1	.	.
18	do. do. . .	May, 1852	20	.	1	.	.	.	.	.	.	.	1	do.	1	.	.
19	do. do. . .	Aug. 1852	30	1	.	1	1	*	5 mo.	.	.	.	1	do.	1	.	.
20	do. do. . .	Sept. 1853	56	1	.	.	.	.	.	.	.	.	1	do.	1	.	.
21	do. do. . .	Sept. 1853	26	1	.	.	.	.	6 mo.	.	.	.	1	do.	1	.	.
22	do. do. . .	April, 1854	36	1	.	1	1	*	.	.	.	.	1	.	1	.	.
23	do. do. . .	July, 1854	31	.	1	1	1	*	.	.	.	.	1	Adhesions	1	.	.
24	do. do. . .	Sept. 1854	52	1	.	.	.	.	.	.	.	.	1	do.	1	.	.
25	do. do. . .	Sept. 1854	59	1	.	1	1	*	.	.	.	.	1	do.	1	.	.
26	do. do. . .	Oct. 1854	24	1	.	.	.	.	.	.	.	.	1	do.	1	.	.
27	do. do. . .	Oct. 1854	42	1	.	.	.	.	.	.	.	.	1	do.	1	.	.
28	do. do. . .	Dec. 1854	49	.	1	.	.	.	.	.	.	.	1	.	1	.	.
29	Anonymous .	. . . . .	30	1	.	.	.	.	.	.	.	.	.	Universal	1	.	.
30	do. . . . .	. . . . .	35	1	.	.	.	.	.	.	.	.	.	.	1	.	.
31	Burd, H. E. .	Sept. 1846	25	1	.	.	.	.	12½ mo.	.	.	.	1	1	.	1	.
32	Bellinger . .	Dec. 1835	35	1	.	1	.	.	1 yr.	Regular . . .	.	.	1	.	.	1	.
33	do. . . . .	. . . . .	.	.	.	.	.	.	Many yrs.	.	.	.	.	Extensive	.	1	.
34	Bird, Fred. .	June, 1843	35	1	.	.	.	.	16 yr.	Regular . . .	10	1	.	Slight	1	.	.
35	do. do. . .	Nov. 1843	21	.	1	.	.	.	2 yr.	Irregular . .	.	.	1	.	1	.	.
36	do. do. . .	Jan. 1844	35	1	.	1	.	.	6 yr.	do. . . . .	.	.	1	Adhesions	1	.	.
37	do. do. . .	April, 1844	21	.	1	1	.	.	3 yr.	Regular . . .	.	.	1	.	1	.	.
38	do. do. . .	. . . . .	.	.	.	.	.	.	.	.	.	.	1	Adhesions	.	.	*
39	do. do. . .	. . . . .	.	.	.	.	.	.	.	.	.	.	1	do.	1	.	.
40	do. do. . .	. . . . .	.	.	1	.	.	.	.	.	.	.	1	do.	1	.	.
41	do. do. . .	. . . . .	.	.	1	.	.	.	.	.	Often	.	1	do.	1	.	.
42	do. do. . .	. . . . .	.	.	1	1	1	*	.	.	.	.	1	.	1	.	.
43	do. do. . .	. . . . .	.	.	1	.	.	.	.	.	.	.	1	.	1	.	.
44	do. do. . .	. . . . .	.	.	1	.	.	.	.	.	.	.	1	.	1	.	.
45	do. do. . .	. . . . .	21	.	1	.	.	.	.	.	.	.	1	Slight	1	.	.
46	do. do. . .	. . . . .	.	.	.	.	.	.	.	.	.	.	1	.	1	.	.
47	do. do. . .	Jan. 1848	.	1	.	.	.	.	.	.	.	.	1	Adhesions	.	1	.
48	do. do. . .	. . . . .	.	1	.	.	.	.	.	.	.	.	1	do.	1	.	.
49	do. do. . .	. . . . .	.	.	.	.	.	.	.	.	.	.	1	do.	1	.	.
50	do. do. . .	. . . . .	.	.	1	.	.	.	.	.	.	.	1	do.	1	.	.
51	do. do. . .	. . . . .	.	.	1	.	.	.	.	.	.	.	1	do.	1	.	.
52	do. do. . .	. . . . .	.	.	1	.	.	.	.	.	.	.	1	do.	1	.	.
53	do. do. . .	. . . . .	.	.	1	.	.	.	.	.	.	.	1	do.	1	.	.
54	do. do. . .	. . . . .	.	.	1	.	.	.	.	.	.	.	1	do.	1	.	.
55	do. do. . .	. . . . .	.	.	1	.	.	.	.	.	.	.	1	do.	1	.	.

ON FOR REMOVAL OF DISEASED OVARIA.

PRECEDING SYNOPSIS.

Description.	Died.	Cause of Death.	Recovered.	Period of Recovery or Death after Operation.	Why not removed.	Complications and Remarks.
sted	1			3 weeks	Adhesions . . .	
o.	1				do.	
o.			1		do.	Tapped afterwards.
o. 18 lb.			1	3 months		Ascites; for which she was tapped 6 times.
o. 45 lb.	1	Pneumonia		15th day		
o. 10½ lb.	1	Peritonitis		6th day		Diagnosticated right ovary; no adhesions, though tapped.
ous, 8 lb.			1	1 month		Procidentia uteri; pregnant twice since, and once during growth; no fluid by tapping.
s			1	9 days	Uterus diseased .	Uterine; died, in few months, of erysipelas; no fluid by tapping.
l & fluid, 40 lb.			1	1 month		Two children since, and one before.
ic, 14 lb.	1	Peritonitis		6th day		Adhesions ligatured.
iform, 28 lb.	1	Exhaustion		3d day	Adhesions . . .	Spermatic artery tied.
o. 25 lb.	1	do.		3d day		Ascites; for which she was tapped 5 times.
o. 25 lb.	1		1	Rapidly	Adhesions . . .	A portion of cyst, size of hand, left attached; pregnant since.
o. 15 lb.			1	do.	do.	Part of cyst left; torsion of vessels; living '55.
o. 81 lb.	1	Starvation		30th day		Two months' pregnancy; no miscarriage.
o. 35½ lb.	1	Peritonitis		3d day		Ascites.
o. 28 lb.			1			
o. 25 lb.	1	Exhaustion		13 hours		Thickened omentum; "rotten" cysts.
o. 40 lb.	1	do.		9 hours		"Rotten" cysts.
o. 50 lb.			1			Ascites.
o. 40 lb.	1	Gangrene of jejunum		22 days		Wound had healed.
o. 15 lb.			1			Ascites.
o. 50 lb.	1	Exhaustion		5th day		Tubercular deposits in abdomen.
o. 24 lb.			1			
o. and fibrous, 1 lb.	1	Hemorrhage		5th day		Pelvic tumor; fibrous tumor in pelvis removed also.
iform, 30 lb.			1			
o. 38 lb.	1	Hemorrhage		6th day		
o. 18 lb.			1			
ge cyst	1	Loss of blood, & shock		28 hours		
ysted	1	Peritonitis		Less than a week		
iform, 50 lb.			1	7 weeks		Pregnancy; abortion in 2 days, afterwards pregnant; began during <i>previous</i> preg'cy.
			1	Few weeks		Uterine disease; menses never returned (!); see Synopsis.
			1		Adhesions . . .	
, 20 lb.			1	5 weeks		
27 lb.			1	3 weeks		
35 lb.			1	4 weeks		
29 lb.			1	7 weeks		
			1		Adhesions . . .	
			1			
	1			3d day		
	1			3d day		
			1			
tilocular	1			5th day		
	1			1 week		
			1			
ignant	1			28 hours	Adhesions . . .	
			1		do.	Recovered from operation.
			1		do.	do. do. do.
			1		do.	do. do. do. lived two years.
	1			6 weeks	do.	
			1		do.	Recovered from operation; lived two years.
			1		do.	do. do. do. lived nearly 3 years.
			1		do.	do. do. do. lived six months.
			1		do.	do. do. do.

TABLE OF THREE HUNDRED CASES OF OPI

ARRANGED FROM

Number.	Operator.	Date of Operation.	Age.	Married or Single.		Ovary removed		Both diseased.	Duration at Time of Operation.	Catamenia.	Previous Tappings.	Kind of Incision.		Adhesions.	Removed.		Pa- ren-
				M.	S.	R.	L.					S.	L.		Yes.	No.	
1	Anderson . .	Sept. 1848	34	1	.	.	.	*	2½ yr.	.	2	1	.	Extensive	1	.	.
2	Arnott . . .	. . 1848	23	.	.	.	.	.	.	.	1	1	.	do.	1	.	.
3	Arrowsmith .	. . 1846	24	.	.	.	.	.	.	.	1	1	.	do.	1	.	.
4	Atlee, J. L. .	June, 1843	25	.	1	1	1	*	7 yr.	Irregular	6	1	1	1 adherent	1	.	.
5	do. do. . .	. . 1846	33	.	.	.	.	.	.	.	2	1	1	Adhesions	1	.	.
6	Atlee, W. L. .	Mar. 1844	61	1	.	.	1	*	21 yr.	.	2	1	1	.	1	.	.
7	do. do. . .	Mar. 1849	29	1	.	1	.	.	3 yr.	.	1	1	1	Adhesions	1	.	.
8	do. do. . .	May, 1849	33	.	1	.	.	*	4 yr.	Irregular	1	1	1	.	1	.	.
9	do. do. . .	June, 1849	25	1	*	1	.	.	4 yr.	Regular	.	1	1	Adhesions	1	.	.
10	do. do. . .	Feb. 1850	30	.	1	.	.	.	.	.	.	1	1	Extensive	1	.	.
11	do. do. . .	Feb. 1850	48	1	.	.	.	.	.	.	5	1	1	Adhesions	1	.	.
12	do. do. . .	Mar. 1850	40	1	.	.	.	.	.	.	.	1	1	do.	1	.	.
13	do. do. . .	June, 1850	37	1	.	.	.	.	.	.	.	1	1	do.	.	.	.
14	do. do. . .	July, 1850	42	1	.	.	.	.	.	.	.	1	1	General	.	.	.
15	do. do. . .	Nov. 1850	28	1	.	.	.	.	.	.	16	1	1	Adhesions	1	.	.
16	do. do. . .	April, 1851	29	1	.	.	.	.	.	.	.	1	1	Firm	1	.	.
17	do. do. . .	Jan. 1852	68	1	.	.	.	.	.	.	.	1	1	Adhesions	1	.	.
18	do. do. . .	May, 1852	20	.	1	.	.	.	.	.	.	1	1	do.	1	.	.
19	do. do. . .	Aug. 1852	30	1	.	1	1	*	5 mo.	.	.	1	1	do.	1	.	.
20	do. do. . .	Sept. 1853	56	1	.	.	.	.	.	.	.	1	1	do.	1	.	.
21	do. do. . .	Sept. 1853	26	1	.	.	.	.	6 mo.	.	.	1	1	do.	1	.	.
22	do. do. . .	April, 1854	36	1	.	1	1	*	.	.	.	1	1	do.	1	.	.
23	do. do. . .	July, 1854	31	.	1	1	1	*	.	.	.	1	1	Adhesions	1	.	.
24	do. do. . .	Sept. 1854	52	1	.	.	.	.	.	.	.	1	1	do.	1	.	.
25	do. do. . .	Sept. 1854	59	1	.	1	1	*	.	.	.	1	1	do.	1	.	.
26	do. do. . .	Oct. 1854	24	1	.	.	.	.	.	.	.	1	1	do.	1	.	.
27	do. do. . .	Oct. 1854	42	1	.	.	.	.	.	.	.	1	1	do.	1	.	.
28	do. do. . .	Dec. 1854	49	.	1	.	.	.	.	.	.	1	1	do.	1	.	.
29	Anonymous .	. . . .	30	1	.	.	.	.	.	.	.	.	.	Universal	1	.	.
30	do. . . . .	. . . .	35	1	.	.	.	.	.	.	.	.	.	do.	1	.	.
31	Burd, H. E. .	Sept. 1846	25	1	.	.	.	.	12½ mo.	.	.	1	1	.	1	.	.
32	Bellinger . .	Dec. 1835	35	1	.	1	.	.	1 yr.	Regular	.	1	1	.	1	.	.
33	do. . . . .	. . . .	.	.	.	.	.	.	Many yrs.	.	.	.	.	Extensive	1	.	.
34	Bird, Fred. .	June, 1843	35	1	.	.	.	.	16 yr.	Regular	10	1	1	Slight	1	.	.
35	do. do. . .	Nov. 1843	21	.	1	.	.	.	2 yr.	Irregular	.	1	1	.	1	.	.
36	do. do. . .	Jan. 1844	35	1	.	1	.	.	6 yr.	do.	.	1	1	Adhesions	1	.	.
37	do. do. . .	April, 1844	21	.	1	1	.	.	3 yr.	Regular	.	1	1	Adhesions	1	.	.
38	do. do. . .	. . . .	.	.	.	.	.	.	.	.	.	1	1	do.	1	.	.
39	do. do. . .	. . . .	.	.	.	.	.	.	.	.	.	1	1	do.	1	.	.
40	do. do. . .	. . . .	.	.	1	.	.	.	.	.	.	1	1	do.	1	.	.
41	do. do. . .	. . . .	.	1	.	.	.	.	.	.	Often	1	1	do.	1	.	.
42	do. do. . .	. . . .	.	1	.	1	1	*	.	.	.	1	1	do.	1	.	.
43	do. do. . .	. . . .	.	1	.	.	.	.	.	.	.	1	1	.	1	.	.
44	do. do. . .	. . . .	.	1	.	.	.	.	.	.	.	1	1	.	1	.	.
45	do. do. . .	. . . .	21	.	1	.	.	.	.	.	.	1	1	Slight	1	.	.
46	do. do. . .	. . . .	.	.	.	.	.	.	.	.	.	1	1	.	1	.	.
47	do. do. . .	Jan. 1848	.	1	.	.	.	.	.	.	.	1	1	Adhesions	1	.	.
48	do. do. . .	. . . .	.	1	.	.	.	.	.	.	.	1	1	do.	1	.	.
49	do. do. . .	. . . .	.	.	.	.	.	.	.	.	.	1	1	do.	1	.	.
50	do. do. . .	. . . .	.	.	1	.	.	.	.	.	.	1	1	do.	1	.	.
51	do. do. . .	. . . .	.	1	.	.	.	.	.	.	.	1	1	do.	1	.	.
52	do. do. . .	. . . .	.	1	.	.	.	.	.	.	.	1	1	do.	1	.	.
53	do. do. . .	. . . .	.	1	.	.	.	.	.	.	.	1	1	do.	1	.	.
54	do. do. . .	. . . .	.	1	.	.	.	.	.	.	.	1	1	do.	1	.	.
55	do. do. . .	. . . .	.	1	.	.	.	.	.	.	.	1	1	do.	1	.	.

SECTION FOR REMOVAL OF DISEASED OVARIA.

PRECEDING SYNOPSIS.

Description.	Died.	Cause of Death.	Recovered. Period of Recovery or Death after Operation.	Why not removed.	Complications and Remarks.
Encysted	1	. . . . .	3 weeks	Adhesions . . .	
do.	1	. . . . .	. . . . .	do.	Tapped afterwards.
do. . . . .	. . . . .	. . . . .	1	do.	Ascites; for which she was tapped 6 times.
do. 18 lb. . . . .	. . . . .	. . . . .	1 3 months	. . . . .
do. 45 lb.	1	Pneumonia	15th day	. . . . .	Diagnosticated right ovary; no adhesions, though tapped.
do. 10½ lb.	1	Peritonitis	6th day	. . . . .	Procidentia uteri; pregnant twice since, and once during growth; no fluid by tapping.
Fibrous, 8 lb. . . . .	. . . . .	. . . . .	1 1 month	. . . . .	Uterine; died, in few months, of erysipelas; no fluid by tapping.
Cysts . . . . .	. . . . .	. . . . .	1 9 days	Uterus diseased .	Two children since, and one before.
Solid & fluid, 40 lb.	. . . . .	. . . . .	1 1 month	. . . . .	Adhesions ligatured.
Cystic, 14 lb.	1	Peritonitis	6th day	. . . . .	Spermatic artery tied.
Cystiform, 28 lb.	1	Exhaustion	3d day	Adhesions . . .	Ascites; for which she was tapped 5 times.
do. 25 lb.	1	do.	3d day	Adhesions . . .	A portion of cyst, size of hand, left attached; pregnant since.
do. 25 lb. . . . .	. . . . .	. . . . .	1 Rapidly	Adhesions . . .	Part of cyst left; torsion of vessels; living '55.
do. 15 lb. . . . .	. . . . .	. . . . .	1 do.	do.	Two months' pregnancy; no miscarriage.
do. 81 lb.	1	Starvation	30th day	. . . . .	Ascites.
do. 35½ lb.	1	Peritonitis	3d day	. . . . .	Thickened omentum; "rotten" cysts.
do. 28 lb. . . . .	. . . . .	. . . . .	1 . . . . .	. . . . .	"Rotten" cysts.
do. 25 lb.	1	Exhaustion	13 hours	. . . . .	Ascites.
do. 40 lb.	1	do.	9 hours	. . . . .	Wound had healed.
do. 50 lb.	1	Gangrene of jejunum	22 days	. . . . .	Ascites.
do. 40 lb.	1	. . . . .	1 . . . . .	. . . . .	Tubercular deposits in abdomen.
do. 15 lb.	1	Exhaustion	5th day	. . . . .
do. 50 lb.	1	Hemorrhage	5th day	. . . . .	Pelvic tumor; fibrous tumor in pelvis re- moved also.
do. 24 lb.	1	. . . . .	1 . . . . .	. . . . .
do. and fibrous, 20 lb.	1	Hemorrhage	5th day	. . . . .
Cystiform, 30 lb. . . . .	. . . . .	. . . . .	1 . . . . .	. . . . .
do. 38 lb.	1	Hemorrhage	6th day	. . . . .
do. 18 lb. . . . .	. . . . .	. . . . .	1 . . . . .	. . . . .
Huge cyst	1	Loss of blood, & shock	28 hours	. . . . .
Encysted	1	Peritonitis	Less than a week	. . . . .
Cystiform, 50 lb. . . . .	. . . . .	. . . . .	1 7 weeks	. . . . .	Pregnancy; abortion in 2 days, afterwards pregnant; began during previous preg'y.
. . . . .	. . . . .	. . . . .	1 Few weeks	. . . . .	Uterine disease; menses never returned (!); see Synopsis.
. . . . .	. . . . .	. . . . .	1 . . . . .	. . . . .
Cyst, 20 lb. . . . .	. . . . .	. . . . .	1 5 weeks	Adhesions . . .	
do. 27 lb. . . . .	. . . . .	. . . . .	1 3 weeks	. . . . .
do. 35 lb. . . . .	. . . . .	. . . . .	1 4 weeks	. . . . .
do. 29 lb. . . . .	. . . . .	. . . . .	1 7 weeks	. . . . .
do. . . . .	. . . . .	. . . . .	1	Adhesions . . .	
do. . . . .	. . . . .	. . . . .	1 . . . . .	. . . . .
.	1	. . . . .	3d day	. . . . .
.	1	. . . . .	3d day	. . . . .
. . . . .	. . . . .	. . . . .	1 . . . . .	. . . . .
Multilocular	1	. . . . .	5th day	. . . . .
.	1	. . . . .	1 week	. . . . .
. . . . .	. . . . .	. . . . .	1 . . . . .	. . . . .
Malignant	1	. . . . .	1 28 hours	Adhesions . . .	
. . . . .	. . . . .	. . . . .	1	do.	Recovered from operation.
. . . . .	. . . . .	. . . . .	1	do.	do. do. do.
. . . . .	. . . . .	. . . . .	1	do.	do. do. do. lived two years.
.	1	. . . . .	6 weeks	do.	
. . . . .	. . . . .	. . . . .	1	do.	Recovered from operation; lived two years.
. . . . .	. . . . .	. . . . .	1	do.	do. do. do. lived nearly 3 years.
. . . . .	. . . . .	. . . . .	1	do.	do. do. do. lived six months.
. . . . .	. . . . .	. . . . .	1	do.	do. do. do.

TABLE OF THREE HUNDRED CASES OF OPERATION

Number.	Operator.	Date of Operation.	Age.	Married or Single.		Ovary removed.		Both diseased.	Duration at Time of Operation.	Catamenia.	Previous Tappings.	Kind of Incision.		Adhesions.	Removed.		Partially removed.
				M.	S.	R.	L.					S.	L.		Yes.	No.	
56	Bird, Fred.	. . . .	..	.	.	.	.	..	. . . .	. . . .	..	1	.	Adhesions	.	1	. . . .
57	do.	. . . .	..	.	.	.	.	..	. . . .	. . . .	..	1	.	do.	.	1	. . . .
58	do.	. . . .	..	1	.	.	.	..	. . . .	. . . .	..	1	.	do.	.	1	. . . .
59	do.	. . . .	..	1	.	.	.	..	. . . .	. . . .	..	1	.	do.	.	1	. . . .
60	do.	. . . .	..	1	1	.	.	..	. . . .	. . . .	..	1	.	do.	.	1	. . . .
61	do.	. . . .	..	1	.	.	.	..	. . . .	. . . .	..	1	.	do.	.	1	. . . .
62	do.	. . . .	..	1	.	.	.	..	. . . .	. . . .	..	1	.	do.	.	1	. . . .
63	do.	. . . .	..	1	.	.	.	..	. . . .	. . . .	..	1	.	do.	.	1	. . . .
64	do.	. . . .	..	1	.	.	.	..	. . . .	. . . .	..	1	.	do.	.	1	. . . .
65	do.	. . . .	..	1	.	.	.	..	. . . .	. . . .	..	1	.	do.	.	1	. . . .
66	Bowles . . .	Aug. 1844	25	1	.	1	.	..	1 yr.	. . . .	..	.	1	do.	1	.	. . . .
67	Buckner . . .	Jan. 1850	39	1	.	1	.	..	. . . .	. . . .	..	.	1	do.	1	.	. . . .
68	do.	April, 1848	..	1	.	.	.	..	. . . .	. . . .	..	.	.	. . . .	1	.	. . . .
69	do.	June, 1848	..	1	.	.	1	..	. . . .	. . . .	..	1	1	. . . .	1	.	. . . .
70	do.	Oct. 1851	..	1	.	.	.	..	2 yr.	. . . .	..	.	1	. . . .	1	.	. . . .
71	Beale	Dec. 1850	30	.	1	.	1	..	1 yr.	. . . .	..	.	1	. . . .	1	.	. . . .
72	Bennett, E. . .	June, 1851	52	1	.	.	.	..	2 yr.	. . . .	2	.	.	Adhesions	1	.	. . . .
73	Bennett, E. P.	Jan. 1856	23	.	1	.	.	..	2 yr.	Regular	.	1	1	. . . .	1	.	. . . .
74	Brown, I. B. .	Mar. 1852	30	.	1	.	1	..	9 yr.?	. . . .	2?	1	1	. . . .	1	.	. . . .
75	do.	May, 1852	23	1	.	.	.	..	2 yr.	Regular	. . .	1	.	Adhesions	1	.	. . . .
76	do.	June, 1852	30	1	.	1	.	..	18 mo.	. . . .	.	.	1	do.	1	.	. . . .
77	do.	Mar. 1854	57	1	.	1?	.	..	13 mo.	. . . .	1	1	1	. . . .	1	.	. . . .
78	do.	. . . .	27	.	1	.	.	..	7 yr.?	. . . .	Many	.	1	Slight	1	.	. . . .
79	do.	July, 1852	37	1	.	.	.	..	9 yr.	. . . .	7	.	1	Adhesions	1	.	. . . .
80	do.	April, 1854	37	1	.	.	.	..	2 yr.	. . . .	.	1	.	do.	1	.	. . . .
81	Bayless . . .	1850	..	.	.	.	.	..	. . . .	. . . .	.	1	.	. . . .	1	.	. . . .
82	do.	Jan. 1853	20	1	.	.	1	..	4 yr.	. . . .	1	1	.	Adhesions	1	.	. . . .
83	Bradford . . .	June, 1853	21	.	1	.	1	..	12 yr.	Regular	.	.	1	do.	1	.	. . . .
84	Bigelow . . .	Dec. 1849	22	.	.	.	1	..	1 yr.	. . . .	2	.	1	do.	1	.	. . . .
85	Burnham . . .	June, 1853	42	.	1	1	1	*	6 yr.	. . . .	.	.	1	do.	1	.	. . . .
86	Baker	May, 1851	18	.	.	.	.	..	6 yr.	. . . .	.	1	.	do.	1	.	. . . .
87	Blackman . . .	Dec. 1855	..	.	.	.	.	..	. . . .	. . . .	ser'r'l	.	.	Slight	1	.	. . . .
88	Cooper	Nov. 1843	32	1	.	1	.	..	5 yr.	Always irreg.	2	.	1	do.	1	.	. . . .
89	Cornish	Feb. 1850	19	.	.	1	.	..	18 mo.	Tolerably reg.	.	.	1	do.	1	.	. . . .
90	Chrysmar . . .	May, 1819	47	1	.	.	1	..	4 yr.	. . . .	.	.	1	Extensive	1	.	. . . .
91	do.	June, 1820	38	1	.	.	1	..	7 yr.?	. . . .	.	.	1	Adhesions	1	.	. . . .
92	do.	Aug. 1820	38	.	1	.	1	*	6 yr.	Irregular	1	.	1	do.	1	.	. . . .
93	Crouch	July, 1849	24	.	1	.	1	..	2 yr.	Regular	1	.	1	do.	1	.	. . . .
94	Crisp . . . .	. . . .	..	.	.	.	.	..	20 yr.	. . . .	2	.	1	. . . .	1	.	. . . .
95	Childs	Mar. 1853	33	1	.	1	.	..	10 mo.	. . . .	.	1	1	. . . .	1	.	. . . .
96	do.	. . . .	..	.	.	.	.	..	. . . .	. . . .	.	.	.	. . . .	1	.	. . . .
97	Craig, Ky. . .	April, 1854	26	1	.	.	1	..	. . . .	Irregular	.	.	1	Adhesions	1	.	. . . .
98	Clay	Sept. 1842	46	1	.	1	.	..	3 yr.	Regular	.	.	1	do.	1	.	. . . .
99	do.	Oct. 1842	57	1	.	.	1	..	10 mo.	. . . .	.	.	1	do.	1	.	. . . .
100	do.	1842	46	1	.	.	.	..	7 yr.	Regular	1	1	.	do.	1	.	. . . .
101	do.	Nov. 1842	39	1	.	1	.	..	7 yr.	. . . .	5	.	1	do.	1	.	. . . .
102	do.	1843	45	1	.	1	1	*	. . . .	. . . .	.	.	1	. . . .	1	.	. . . .
103	do.	Aug. 1844	22	.	1	1	.	..	5 or 6 yr.	Regular	6	.	1	Adhesions	1	.	. . . .
104	do.	Jan. 1845	35	.	1	.	.	..	10 or 12 yr.	. . . .	6	.	1	do.	1	.	. . . .
105	do.	Mar. 1843	35	1	.	.	.	..	. . . .	. . . .	Often	.	1	Adhesions	1	.	. . . .
106	do.	Oct. 1843	46	1	.	.	.	R*	. . . .	. . . .	1	1	.	do.	1	.	. . . .
107	do.	July, 1845	38	1	.	.	.	..	. . . .	. . . .	.	1	.	Adhesions	1	.	. . . .
108	do.	Jan. 1846	51	1	.	.	1	..	. . . .	Irregular	.	1	1	. . . .	1	.	. . . .
109	do.	Aug. 1845	35	1	.	1	.	..	. . . .	do.	3	.	1	Slight	1	.	. . . .
110	do.	Oct. 1845	38	.	.	.	.	*?	4 yr.	. . . .	3	.	1	Adhesions	1	.	. . . .
111	do.	Sept. 1848	27	.	.	.	.	R*	3 yr.	Irregular	1	.	1	do.	.	.	*
112	do.	June, 1847	32	1	.	.	.	..	. . . .	. . . .	2	.	1	. . . .	1	.	. . . .
113	do.	July, 1846	32	1	.	.	.	..	4 yr.	Irregular	5	.	1	. . . .	1	.	. . . .
114	do.	Mar. 1846	45	1	.	1	.	..	12 yr.	do.	.	.	1	Adhesions	1	.	. . . .
115	do.	1847	51	1	.	.	.	..	16 yr.	. . . .	.	.	1	do.	1	.	. . . .
116	do.	Aug. 1843	40	1	.	1	.	..	. . . .	Irregular	.	.	1	do.	1	.	. . . .
117	do.	Nov. 1843	40	1	.	1?	.	..	10 or 12 yr.	. . . .	3	.	1	do.	1	.	. . . .
118	do.	Nov. 1846	26	.	.	1	.	..	3 or 4 yr.	. . . .	.	.	1	. . . .	1	.	. . . .

Description.	Died.	Cause of Death.	Recovered.	Period of Recovery or Death after Operation.	Why not removed.	Complications and Remarks.
.	.	.	1	.	Adhesions . . .	Recovered from operation; tapped several times after.
.	.	.	1	.	do. . . .	Recov'd from operation; tapped afterwards.
.	.	.	1	.	do. . . .	do. do. do. do. do.
.	1	.	1	.	do. . . .	.
.	1	Hepatic abscess . . .	1	1 day . . .	do. . . .	Recov'd from operation; tapped afterwards.
Colloid . . . . .	.	.	1	.	do. . . .	do. do. do. living 10 mos. after.
.	.	.	1	.	do. . . .	do. do. do. tapped afterwards.
.	.	.	1	.	do. . . .	do. do. do. living a year after.
Solid, 5 lb. . . . .	.	.	1	.	do. . . .	do. do. do.
Fibrous . . . . .	.	.	1	2 months . . .	.	Last ligature remaining 2 months after.
.	.	.	1	Eventually . . .	.	Ligature fell 39th day.
1 Peritonitis . . . . .	.	.	1	6th day . . .	.	Was well 2 years after, and menses regular.
Mesenteric . . . . .	.	.	1	7 weeks . . .	.	.
Cyst, 25 lb. . . . .	.	.	1	3 weeks . . .	.	Dissected off intestine, adherent 12 inches!
Cystiform	1	Exhaustion	1	4th day . . .	.	.
.	.	.	1	.	.	.
Vascular cyst . . . . .	.	.	1	4 weeks . . .	.	No unpleasant symptom.
do. do.	1	Hemorrhage . . . . .	.	40 hours . . .	.	Extirpation not intended, hemorrhage required it; since married and pregnant.
Solid and fluid	1	Peritonitis . . . . .	.	31st day . . .	.	Extirpation not intended, hemorrhage required it.
Cystic . . . . .	.	.	1	2 weeks . . .	.	Menses 26th day; 2 openings into bowels.
Multilocular	1	Peritonitis . . . . .	.	3 days . . .	.	Ascites; pedicle fastened to wound.
do. 70 lb.	1	do. . . . .	.	5 days . . .	.	.
Piliferous	1	do. . . . .	.	9 days . . .	.	Pedicle fastened to external wound.
.	.	.	1	.	.	.
Cyst and bone	1	Hemorrhage . . . . .	.	20½ hours . . .	.	Hemorrh. from adhesions (?) early pregnancy!
Cyst, 8 lb.	1	.	1	6 weeks . . .	.	Began at 9 years of age.
.	.	.	1	3d day . . .	.	Ascites, and fibrous tumor of uterus; uterine tumor removed, ¾ lb.
1 fibrous, 1 cystic	1	Collapse from hemorrh.	1	35 days . . .	.	Fibr. uterus; uterus & both ovaries removed!
Cystic . . . . .	.	.	1	26 hours . . .	.	Began at age of 12 years and 3 months!
22 lb. . . . .	.	.	1	.	.	No bad symptoms.
Cyst, 32 lb.	1	Peritonitis . . . . .	.	7 days . . .	.	Fungoid disease of uterus.
Solid and fluid, 7½ lb.	1	.	1	54 days . . .	.	.
Solid, 7½ lb.	1	Peritonitis . . . . .	.	36 hours . . .	.	Ascites.
Fibrous, 8 lb. . . . .	.	.	1	6 weeks . . .	.	Pregnant afterwards.
Solid, 6½ lb.	1	Peritonitis . . . . .	.	36 hours . . .	.	Ascites; dis. liver & uterus; tap'd for ascites.
Cysts (200), 4 lb. . . . .	.	.	1	5 weeks . . .	.	Afterwards pregnant; ligature as for nævus.
Cystic . . . . .	.	.	1	.	.	No adhesions where tapped.
Cysts . . . . .	.	.	1	.	.	.
.	1	Diarrhœa . . . . .	.	.	.	.
Cystic and solid . . . . .	.	.	1	7 weeks . . .	.	Ascites; well 4 months after.
Cyst. & solid, 17lb. 5oz. . . . .	.	.	1	21st day . . .	.	Ascites, and prolapsus of vagina.
Cystic and solid, 5 lb. . . . .	.	.	1	14 days . . .	.	Ascites; for which she was tapped.
Malig. vascular, 30lb.	1	.	.	6th day . . .	Adhesions . . .	Oij bloody fluid only, from tapping.
Cystic & solid, 73½ lb. . . . .	.	.	1	5 weeks . . .	.	Ascites; pregnant once during growth.
Solid, 13 lb.	1	Hemorrhage . . . . .	.	1½ hours . . .	.	Disease of uterus; nearly all uterus removed.
Cys. & solid, 29lb. 14oz. . . . .	.	.	1	23 days . . .	.	Had been salivated.
Cystic and solid, 23lb. . . . .	.	.	1	15 days . . .	.	.
Solid and fluid, 25½ lb.	1	Hemorrhage . . . . .	.	27 hours . . .	.	Ruptured spontaneously 2 or 3 times.
.	.	.	1	1 week . . .	Adhesions; loose	Disease of uterus and liver; well 2 years after;
Cystic . . . . .	.	.	1	8 weeks . . .	hydatids. . .	tent introduced after emptying cyst.
.	.	.	.	.	Adhesions . . .	Well two years after; tent introduced after emptying cyst.
Cystic, 6 lb. . . . .	.	.	1	8 days . . .	.	Menses regular since.
Cystic and solid, 18lb. . . . .	.	.	1	3 weeks . . .	.	.
do. do. 14 lb. . . . .	.	.	1	4 weeks . . .	.	Tent in solid part; recovered from operation and disease.
do. do. . . . .	.	.	1	5 weeks . . .	Adhesions . . .	Ascites; began during pregnancy; pregnant five months after, and aborted.
do. do. 14½ lb. . . . .	.	.	1	1 month . . .	.	Menses became regular.
do. do. 22 lb. . . . .	.	.	1	5 weeks . . .	.	do. do. do.
Solid, 46 lb. . . . .	.	.	1	.	.	.
40 lb. . . . .	.	.	1	.	.	.
Cystic and solid, 30lb.	1	Exhaustion . . . . .	.	36 hours . . .	.	.
do. do. 16 lb.	1	Peritonitis . . . . .	.	2d day . . .	.	.
do. do. 35 lb.	1	Peritonitis (?) . . . . .	.	10th day . . .	.	.

TABLE OF THREE HUNDRED CASES OF OPERATION

Number.	Operator.	Date of Operation.	Age.	Married or Single.		Ovary removed.	Both diseased.	Duration at Time of Operation.	Catamenia.	Previous Tappings.	Kind of Incision.		None.	Adhesions.	Removed.		Partially removed.
				M.	S.						s.	l.			Yes.	No.	
119	Clay . . .	Jan. 1844	52	.	.	1	1	*	16 yr.	Irregular	.	1	.	.	1	.	.
120	do. . . .	Mar. 1848	51	1	.	1	.	.	Long	.	.	1	.	Adhesions	1	.	.
121	do. . . .	June, 1848	47	1	.	.	.	5 or 6 yr.	.	2	1	.	.	do.	1	.	.
122	do. . . .	. . . 1848	40	1	.	.	.	.	.	.	1	.	.	.	1	.	.
123	do. . . .	. . . 1848	19	.	1	.	.	.	.	.	1	.	.	.	1	.	.
124	do. . . .	. . . 1848	35	1	.	.	.	.	.	.	1	.	.	.	1	.	.
125	do. . . .	. . . 1846	27	.	.	.	.	.	.	.	1	.	.	.	1	.	.
126	do. . . .	. . . 1848	45	1	.	.	.	.	.	.	1	.	.	.	1	.	.
127	do. . . .	. . . 1847	25	1	.	.	.	.	.	.	1	.	.	.	1	.	.
128	do. . . .	. . . 1848	18	.	1	.	.	.	.	.	1	.	.	.	1	.	.
129	do. . . .	. . . 1848	47	.	.	.	.	.	.	.	1	.	.	.	1	.	.
130	do. . . .	. . . 1847	27	1	.	.	.	.	.	.	1	.	.	.	1	.	.
131	do. . . .	. . . 1848	35	1	.	.	.	.	.	.	1	.	.	.	1	.	.
132	do. . . .	. . . 1846	37	1	.	.	.	.	.	.	1	.	.	.	1	.	.
133	do. . . .	.	.	.	.	.	.	.	.	.	1	.	.	.	1	.	.
134	do. . . .	.	.	.	.	.	.	.	.	.	1	.	.	.	1	.	.
135	do. . . .	.	.	.	.	.	.	.	.	.	1	.	.	.	1	.	.
136	do. . . .	.	.	.	.	.	.	.	.	.	1	.	.	.	1	.	.
137	do. . . .	.	.	.	.	.	.	.	.	.	1	.	.	.	1	.	.
138	do. . . .	. . . 1849	33	1	.	.	.	.	.	.	1	.	.	.	1	.	.
139	do. . . .	. . . 1849	32	.	1	.	.	.	.	.	1	.	.	.	1	.	.
140	do. . . .	. . . 1849	48	1	.	.	.	.	.	.	1	.	.	.	1	.	.
141	do. . . .	. . . 1850	45	1	.	.	.	.	.	.	1	.	.	.	1	.	.
142	do. . . .	. . . 1850	38	1	.	.	.	.	.	.	1	.	.	.	1	.	.
143	do. . . .	Oct. 1850	35	.	1	.	.	.	.	.	1	.	.	.	1	.	.
144	do. . . .	Nov. 1850	33	1	.	.	.	.	.	.	1	.	.	.	1	.	.
145	do. . . .	Nov. 1850	57	1	.	.	.	.	.	.	1	.	.	.	1	.	.
146	do. . . .	.	32	1	.	.	.	.	.	.	1	.	.	.	1	.	.
147	do. . . .	Feb. 1851	45	1	.	.	.	.	.	10	1	.	.	.	1	.	.
148	Crume . .	1847 (?)	.	1	.	.	.	.	.	.	.	.	.	.	.	1	.
149	Duffin, E. W.	Aug. 1850	38	.	.	1	.	8 mo.	.	1	1	.	.	.	1	.	.
150	Dickin . .	1845	18	.	1	1	.	20 mo.	.	.	1	.	.	Adhesions	1	.	.
151	Day . . .	Sept. 1850	42	1	.	.	1	2½ yr.	.	1	1	1	.	.	1	.	.
152	Dunlap, Ohio	Mar. 1853	37	1	.	.	1	1 yr.?	.	4	1	.	.	Adhesions	1	.	.
153	do. . . .	May, 1853	46	1	.	.	1	3 yr.	.	.	1	.	.	do.	1	.	.
154	do. . . .	June, 1850	35	1	.	.	.	6 mo.	.	.	1	.	.	Extensive	1	.	.
155	do. . . .	1843	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.
156	do. . . .	Nov. 1855	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.
157	Deane . . .	June, 1848	43	.	.	.	.	1 yr.	.	1	.	.	.	.	1	.	.
158	do. . . .	. . . 1850	45	.	.	.	.	Several yrs.	.	1	1	1	.	.	1	.	.
159	Dieffenbach	. . . 1829	40	1	.	.	.	10 or 12 yr.	Regular	.	1	.	.	Adhesions	1	.	.
160	Dohlhoff . .	Sept. 1836	23	.	1	.	1	4 yr.	Suppression	.	1	.	1	.	1	.	.
161	do. . . .	Oct. 1833	27	1	.	.	.	4 mo.	Regular	.	.	1	.	Adhesions	1	.	.
162	do. . . .	Sept. 1836	23	.	.	.	.	10 mo.	do.	.	.	1	.	.	1	.	.
163	De Morgan .	Oct. 1849	25	.	1	.	.	3 yr.	.	.	1	.	.	Universal	1	.	.
164	Emiliani . .	. . . 1815	.	.	.	.	.	.	.	.	1	.	.	.	1	.	.
165	Elkington .	. . . 1849	31	1	.	.	.	1 yr.?	Irregular	.	1	1	.	Slight	1	.	.
166	do. . . .	July, 1846	37	1	.	.	.	3 yr.	.	6	1	.	.	Adhesions	1	.	.
167	do. . . .	July, 1848	47	1	.	.	.	18 yr.	.	.	.	1	.	Extensive	1	.	.
168	Erichsen . .	. . . 1853	65	.	.	1	.	.	.	.	1	.	.	Slight	1	.	.
169	Fries . . .	May, 1855	.	1	.	.	.	.	.	.	1	.	1	Adhesions	1	.	.
170	Greenhow . .	Sept. 1843	29	1	.	.	1	18 mo.	Irregular	1	.	1	.	do.	1	.	.
171	Galenowski .	. . .	27	.	.	*	.	2 yr.	Regular	.	.	1	.	do.	1	.	.
172	Granville . .	. . . 1827	.	.	.	.	.	.	.	.	.	1	.	do.	1	.	.
173	do. . . .	Mar. 1827	35?	.	.	.	.	.	.	.	.	1	.	.	1	.	.
174	Garrard . . .	April, 1855	20	.	1	1	.	7 mo.	Regular	.	.	1	.	Extensive	1	.	.
175	Gross, Ky. .	June, 1849	22	.	1	1	.	18 mo.	do.	1	.	1	.	Adhesions	1	.	.
176	Grimshaw . .	Sept. 1850	37	1	.	.	1	*	.	8	.	1	.	do.	1	.	.
177	Gibson . . .	Mar. 1850	39	1	*	.	.	*	Regular	10	.	1	.	Extensive	1	.	.
178	Groth . . .	. . . 1835	.	.	.	.	1	.	.	.	.	.	.	.	1	.	.
179	Hawkins . .	Sept. 1846	27	.	1	.	.	4 yr.	Regular	.	.	1	.	.	1	.	.
180	Heath . . .	Nov. 1843	46	.	1	.	.	12 mo.	Menorrhagia	.	.	1	.	.	1	.	.
181	Hayny . . .	.	.	.	.	.	.	.	.	.	.	.	.	Extensive	1	.	.
182	do. . . .	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.
183	Hargraves .	.	40	.	.	.	.	.	.	.	.	.	.	Adhesions	1	.	.
184	Holston . . .	Oct. 1855	27	.	1	.	1	3 yr.	Regular	.	.	1	.	.	1	.	.

Description.	Died.	Cause of Death.	Recovered.	Period of Recovery or Death after Operation.	Why not removed.	Complications and Remarks.
Cystic, 40 lb.	1	Peritonitis	1	15th day		Ascites; uterus rem. also; to 13th d. did well.
	1	Exhaustion	1	3 weeks		Ascites.
46 lb.	1		1	6th day		Second operation on same subject.
	1	Shock	1	24 hours		
Cyst, 50 lb.	1		1	3d day		Ascites.
Cystic and solid, 48lb.	1		1			Since married.
28 lb.	1		1			
40 lb.	1		1			
30 lb.	1	Shock	1	36 hours		
37 lb.	1		1			Continues well.
30 lb.	1	Exhaustion	1	9th day		
20 lb.	1	Inflammation	1	3d day		
40 lb.	1		1			
	1		1		Adhesions (?)	
	1		1		do.	
	1		1		do.	
	1		1		do.	
	1	Exhaustion	1	35 days	do.	Wound healed before death.
31 lb.	1		1			Afterwards pregnant.
35 lb.	1		1			
76 lb.	1		1			
24 lb.	1		1			
24 lb.	1		1			
27 lb.	1	Infl. & obstr. of bowels	1	9th day		
10 lb.	1		1			
26 lb.	1		1			
Small	1		1			
25 lb.	1		1	2d day		
Not ovarian	1		1	3 weeks	Tubal foetation	Result not given.
28 lb.	1		1	3 weeks		Pedicle attached to external wound.
	1		1	5 weeks		
Cystic and solid, 37lb.	1		1	3 weeks		Ascites; during growth, had one child; fecal matter with ligature.
Cyst, 31 lb.	1		1	27 days		Incision 12 inches (below umbilicus)!
	1		1	6 weeks		Incision 10 inches (do.); menses 2d day.
Cystic, 45 lb.	1	Diabetes	1	17th day		Pregnant since; incision 11 inches.
60 lb.	1		1			
Fibrous uterus	1		1	2 weeks	Uterus diseased	Seventeenth day convalescent.
37 lb.	1	Peritonitis	1	12th day		Not ovarian.
Solid and vascular	1		1		Adhesions	
Cystic and solid, 38lb.	1	Peritonitis	1	36 hours		Tumor, ovarian, incised, nothing but blood came.
	1		1	8 hours	Solid tumor	Liquid removed with cup; peritonitis not suspected.
Cystiform	1		1		No tumor	Peritoneal disease; neither ovary affected.
	1		1		Adhesions	Probably fecal, or spasm of intestines.
	1		1			From operation; in 14 days as large as ever.
Cyst, 40 lb.	1		1	1 month		Had 5 children since, 2 of them twins.
	1	Peritonitis	1	4th day	Adhesions	Had child since.
	1	Shock	1	36 hours		Ascites; movable before operation.
	1		1	16 days		Twice pregnant during growth.
Encysted	1	Nausea and diarrhoea	1	7 days		Peritoneum dissected & pedicle tied to wound
	1		1			Conceived and aborted during growth; 2d operation on same subject.
Cystic, 12 lb. 7 oz.	1	Peritonitis	1	6 days		
Cystic	1		1		Adhesions	Tent introduced.
	1		1		do.	
Fibrous uterus	1	Peritonitis	1	3d day		Death hastened by venesection (?)
Cysts, 14 oz.	1		1	2 months		
Vascular cyst, 9 lb.	1	Peritonitis	1	28 days		An adhesion ligatured.
Cystic	1	Hemorr. & exhaust'n	1	5 hours		Ascites; 1 pregnancy during growth.
Malignant	1		1	24th day	Adhesions	Ascites; prostitute.
	1	Hemorrhage	1	16 hours		
Cystic	1		1	28 days		Phlebitis.
Fibrous of uterus, 6lb.	1	Hemorrhage	1	17 hours		No ovarian disease; uterus removed; ligature remained tight.
	1	Exhausted	1	4th day	Adhesions	
	1	Peritonitis	1	6 weeks		A piece of omentum removed also.
	1		1	5 days	Adhesions	
Cystic, 26 lb.	1		1	19 days		Cyst contained 1 pint of blood.

TABLE OF THREE HUNDRED CASES OF OPERATION

Number.	Operator.	Date of Operation.	Age.	Married or Single.		Ovary removed.	Both diseased.	Duration at Time of Operation.	Catamenia.	Previous Tappings.	Kind of Incision.		Adhesions.	Removed.		Partially removed.
				M.	S.	R.	L.				S.	L.		Yes.	No.	
185	Howard . . .	Oct. 1852	17	.	1	.	.	5 mo.	Suppression .	2	.	1	1	.	.	.
186	do.	Oct. 1852	23	1	.	.	.	5 yr.	.	2	1	.	Adhesions	1	1	Part of cyst ex.
187	Handyside . .	Sept. 1845	20	.	1?	1	1	20 mo.	Irregular . . .	10	.	1	.	1	.	.
188	do.	Sept. 1846	33	1	.	1	1	1 yr.	.	4	1	.	.	1	.	.
189	Jeaffreson . .	Mar. 1836	.	1	.	.	1	.	.	.	1	.	.	1	.	.
190	Key	Aug. 1843	19	.	1	1	1	15 mo.	Regular . . . .	.	.	1	1	1	.	.
191	King . . . . .	.	.	.	.	.	.	3 yr.	.	sev'r'l	1?	.	.	1	.	.
192	do.	Mar. 1834	40	.	.	.	.	.	.	.	.	1	.	1	.	.
193	do.	July, 1836	40	.	.	.	.	6 yr.	.	.	1	.	.	1	.	.
194	Kimball . . .	Mar. 1855	25	.	1	.	.	7 yr.	Regular . . . .	.	1	.	1	1	.	.
195	L'Aumonier . .	Jan. 1782	21	1	.	.	.	.	.	.	1	.	.	1	.	.
196	Lizars	Oct. 1823	29	1	.	.	.	8 yr.	Painful . . . .	.	.	1	.	1	.	.
197	do. . . . .	.	36	.	.	.	.	6 yr.	.	.	.	1	1	1	.	.
198	do.	Mar. 1825	25	.	.	.	.	1 yr.	.	.	.	1	.	Adhesions	1	.
199	do.	April, 1825	34	.	1	.	.	6 yr.	Irregular . . .	.	.	1	.	do.	1	.
200	Larrey . . . .	. . 1846	33	.	.	.	.	.	.	.	.	.	.	1	.	.
201	Langenbeck . .	. 1853 (?)	34	.	1	.	.	5 yr.	.	.	.	1	1	1	.	.
202	Lyon	April, 1850	31	.	1	1	.	2 yr.	.	3	1	.	Adhesions	1	.	.
203	Lane	Nov. 1843	28	.	1	.	.	.	.	.	1	.	1	1	.	.
204	do.	Feb. 1844	47	1	.	.	.	.	.	.	.	1	.	Firm	1	.
205	do.	Feb. 1844	43	1	.	.	.	.	.	.	.	1	.	Adhesions	1	.
206	do.	Nov. 1844	20	.	1	.	.	.	.	.	.	1	.	.	1	.
207	do.	Sept. 1845	40	1	.	.	.	.	.	.	.	1	.	Universal	1	.
208	do. . . . .	. . 1845	39	.	1	.	.	.	.	.	.	1	.	.	1	.
209	do.	Nov. 1846	31	.	1	.	.	.	.	.	.	.	.	.	1	.
210	do.	April, 1847	40	1	.	.	.	.	.	.	1	.	Adhesions	1	.	.
211	do. . . . .	.	.	.	.	.	.	.	.	.	1	.	.	1	.	.
212	do.	Oct. 1848	54	.	1	.	.	.	.	.	.	.	Universal	1	.	.
213	do.	Nov. 1849	24	.	1	.	.	.	.	.	.	.	.	1	.	.
214	Litzenberg . .	May, 1855	.	1	.	1	.	2 yr.	.	.	.	1	Universal	1	.	.
215	McDowell . . .	Dec. 1809	.	1	.	.	.	.	.	.	.	1	.	1	.	.
216	do. . . . .	.	.	.	.	.	.	.	.	.	.	1	Adhesions	1	1	Evacuated
217	do. . . . .	.	.	.	.	.	.	.	.	.	.	1	.	1	.	.
218	do.	April, 1817	.	.	.	.	.	.	.	.	.	1	.	1	.	.
219	do. . . . .	.	.	.	.	1	.	.	.	4	.	.	Adhesions	1	.	.
220	Martini . . . .	. 1828 (?)	24	1	.	.	.	L*	.	4	.	1	do.	.	.	*
221	Morgan . . . .	. 1839	26	.	.	.	.	.	.	1	.	.	Slight	1	.	.
222	Mussey	July, 1828	40	1	.	.	.	L*	2 yr. Regular . .	.	.	1	Adhesions	1	1	Evacuated
223	March, N.York	Dec. 1849	49	1	.	1	.	3 yr.	.	.	.	1	1	1	.	.
224	Miller, Ky. . .	April, 1848	37	.	.	.	.	1 yr.?	.	.	1	.	Adhesions	1	.	.
225	Meeker . . . .	.	32	1	.	1	.	2 yr.	.	Often	.	1	Extensive	1	.	.
226	McRuer	Jan. 1853	23	1	.	.	.	15 mo.	.	1	.	1	Adhesions	1	.	.
227	Mercier	Dec. 1854	28	1	.	.	.	1 yr.	Suppression .	7	.	1	Strong	1	.	.
228	Morris . . . .	. . 1843	.	.	.	.	.	.	.	.	.	1	.	1	.	.
229	Mott . . . . .	.	35	1	.	.	.	L*	.	.	.	.	Adhesions	1	1	.
230	do. . . . .	.	40	.	1	.	.	.	.	.	.	1	.	1	.	.
231	Norman	Nov. 1850	23	.	.	.	.	.	Regular . . . .	.	1	.	Adhesions	1	.	.
232	Phillips	Sept. 1840	23	.	1?	1	.	9 mo.	.	.	1	.	1	1	.	.
233	Potter	Mar. 1848	36	1	.	*	1	6 yr.	Suppression .	1	.	1	General	1	.	Right*
234	Peaslee	Sept. 1850	25	.	1	1	1	15 mo.	Regular	1	.	1	Slight	1	.	.
235	do.	Feb. 1855	26	.	.	1	.	4 yr.	Irregular . . .	8	.	1	do.	1	.	.
236	do.	Sept. 1853	35	1	.	.	1	18 mo.	.	.	.	1?	.	1	.	.
237	Prince	Dec. 1847	25	1	.	.	.	18 mo.	Irregular . . .	.	1	.	Adhesions	1	1	Incised*
238	do. . . . .	.	40	1	.	.	.	4 yr.	Regular . . . .	.	1	.	.	1	.	.
239	Parkman	Jan. 1848	27	.	1	.	.	1 yr.	do.	1	.	1	1	1	.	.
240	do.	Aug. 1851	41	1	.	.	.	18 mo.	do.	1	1	.	1	1	.	.

Description.	Died.	Cause of Death.	Recovered.	Period of Recovery or Death after Operation.	Why not removed.	Complications and Remarks.
Cystic	1	Exhaustion	1	8 weeks	Adhesions	Peritoneum dissected for ligature.
Both cystic	1	Ileus	1	17 days	Adhesions	Two pregnancies during growth; tent left in.
do. do. 10 lb.	1	Peritonitis	1	70 days	Adhesions	Bid fair to recover; pneumonia and phlebitis.
Cystic	1	Peritonitis	1	70 days	Adhesions	Ligatures through vagina.
Cystic, 24 lb.	1	Peritonitis	1	5th day	Adhesions	Ligature cut close; pregnancy during growth, and several since.
Mesenteric gland	1	Peritonitis	1	5th day	Mesenteric gland & escape of omentum.	Ascites.
Peritonitis	1	Peritonitis	1	5th day	No tumor	Not ovarian; died a few months after.
Cystic	1	Peritonitis	1	1 week	Adhesions	See Synopsis. There appears to have been tumor.
do.	1	Peritonitis	1	36 days	Adhesions	Ligature cut close.
do.	1	Peritonitis	1	47 days	Adhesions	Adhesions
do.	1	Peritonitis	1	23 days	No tumor	Spinal curvature, obesity, and flatulence.
do.	1	Peritonitis	1	56 hours	Adhesions	Ascites; one ovary removed.
Fibrous of uterus	1	Peritonitis	1	56 hours	Adhesions and vascularly.	Had violent peritonitis; lived 25 years; both ovaries sound; uterus incised.
Piliferous	1	Peritonitis	1	56 hours	Adhesions	Spontaneous rupture, &c.; removed also a calculus from bladder.
Cystic	1	Peritonitis	1	9 weeks	Adhesions	Pedicle attached to wound; colicky pains.
do.	1	Peritonitis	1	Next day	Adhesions	Afterwards married, and had children.
do.	1	Peritonitis	1	Next day	Adhesions	Died, 2 years after, of stricture of rectum.
do.	1	Peritonitis	1	Next day	Adhesions	Lived several years.
do.	1	Peritonitis	1	3d day	Adhesions	Pelvic abscess ensued.
do.	1	Peritonitis	1	3d day	No reason given	Died, two years after, from attempt to cause suppuration.
Solid	1	Peritonitis	1	2 days	Adhesions	Ascites.
do.	1	Peritonitis	1	2 days	Connections with uterus.	Died suddenly, 5 weeks after, of heart disease.
Cystic	1	Peritonitis	1	2 days	Adhesions	Suppuration produced 2 years after; living in 1853.
Cystic	1	Peritonitis	1	22 days	No reason	Cured of disease by inflammation of cyst.
Encysted, 3 galls.	1	Peritonitis	1	25 days	Adhesions	Ligat. & pedicle fastened to external wound.
Cystic, 22½ lb.	1	Peritonitis	1	25 days	Adhesions	Up in five days.
Colloid (?)	1	Peritonitis	1	5 weeks	Adhesions	Returned in two years as large as ever.
Scirrhus, 6 lb.	1	Peritonitis	1	5 weeks	Adhesions	Well in two weeks, excepting ligature.
do. 5 lb.	1	Peritonitis	1	3 days	Adhesions	Hemorrhage; bad health after.
Cystic; piliferous	1	Hemorrhagic	1	36 hours	Adhesions	Adhesions tied.
Solid and cystic	1	Hemorrhagic	1	48 hours	do.	Alcohol injected before; tent; no ascites.
Cystic	1	Hemorrhagic	1	48 hours	do.	Colon adherent to front of sac; tent inserted; recovered from disease also; child after.
do.	1	Hemorrhagic	1	48 hours	do.	Hemorrhage from slipping of ligature.
Cystic, 18 lb.	1	Hemorrhage	1	34 days	Adhesions	Ascites and hernia.
do. 9½ lb.	1	Hemorrhage	1	31 days	Adhesions	Vaginal prolapsus.
40 lb. 8 oz.	1	Hemorrhage	1	6 hours	Adhesions	Ascites; diagnosis, extra-uterine pregnancy or encysted ovary.
Cystic	1	Hemorrhage	1	3 weeks	Adhesions	Ascites; diagnosis, extra-uterine pregnancy or encysted ovary.
Fibrous, 6 lb.	1	Hemorrhage	1	17 days	Adhesions	Ascites; diagnosis, extra-uterine pregnancy or encysted ovary.
Cyst	1	Peritonitis	1	3d day	Adhesions	Circus-rider.
Malignant	1	do.	1	5th day	Adhesions	Fibrous tumor of ovary; good case in every respect.
Fibrous	1	do.	1	5th day	Adhesions	Prolapse of vagina; bowel adherent anteriorly; tumor decreased afterwards.
do.	1	do.	1	3 weeks	Adhesions	Ligature cut close.
Cystic	1	Diarrhoea	1	4th day	Adhesions	Upper ⅔ of right and all the left removed.
Both cystic	1	Peritonitis	1	16th day	Adhesions	Menses 3d day; niece of N. Smith's patient.
do. do.	1	Peritonitis	1	2 months	Adhesions	Ascites, & vaginal prolapse; lig. into vagina; injections to peritoneum; adhesions lig'd.
Solid and cystic, 18 lb.	1	Peritonitis	1	6 weeks	Adhesions	Fibrous tumor of uterus; uterus removed also (see diagnosis).
Cystic	1	Peritonitis	1	5 days	Adhesions	Tent inserted; had child in 16 months.
Solid	1	Peritonitis	1	5th day	Adhesions	Tent inserted

Number.	Operator.	Date of Operation.	Age.	Married or Single.		Ovary removed.	Both diseased.	Duration at Time of Operation.	Catamenia.	Previous Tappings.	Kind of Incision.		None.	Adhesions.	Removed.		Partially removed.
				M.	S.						S.	L.			Y.	No.	
241	Page . . .	Aug. 1844	33	1	.	.	.	2 years	Every 3 weeks	..	1	.	1	.	1	.	.
242	do. . . .	July, 1846	39	1	.	.	.	15 months	Irregular . .	..	1	.	.	Adhesions	.	.	*
243	Paget . . .	1850	24	1	.	.	.	.	.	1	1	.	.	do.	1	1	Evacuated
244	Quittenbaum	.	.	.	.	.	.	.	.	2	1	.	.	.	1	.	.
245	Rogers, N. York	Sept. 1829	20	.	1	.	.	2 years	Suppressed	7	.	1	.	Adhesions	1	.	.
246	Ritter . . .	1832 (?)	31	1	.	1	.	.	.	2	.	1	.	do.	1	.	.
247	Smith, N. . .	July, 1820	33	1	.	1	.	7 years	.	.	1	.	.	do.	1	.	.
248	do. . . .	.	.	.	.	.	.	.	.	..	1	.	.	.	.	1	.
249	do. . . .	.	.	.	.	.	.	.	.	sev't'l	1	.	.	Adhesions	.	1	Evacuated
250	Southam . .	Oct. 1843	37	1	.	.	1	2 years	Regular . .	..	.	1	.	do.	1	.	.
251	do. . . .	.	38	1	.	.	1	8 years	.	..	.	1	1	.	.	1	.
252	do. . . .	.	26	1	.	.	.	10 months	.	..	.	1	.	.	.	1	.
253	do. . . .	.	.	.	.	.	.	.	.	..	1	.	.	Adhesions	.	1	.
254	Solly . . .	June, 1846	24	.	1	1	.	*	Regular	..	1	.	1	.	.	1	.
255	Smith, Henry	1854	23	1	*	.	.	.	.	..	1	.	.	.	.	1	.
256	Stilling . .	April, 1841	22	.	1	1	.	3½ years	.	..	1	.	1	.	.	1	.
257	Smith, Pr. .	1846	39	.	.	.	.	.	.	..	.	1	1	.	.	1	.
258	Stockwell .	Nov. 1850	20	.	.	1?	.	2 years	.	..	1	.	.	.	.	1	.
259	Smith, A. G.	May, 1823	30	1	.	1	.	.	Continued	..	1	.	1	.	.	1	.
260	do. . . .	.	.	.	.	.	.	.	.	..	.	.	.	.	.	1	.
261	do. . . .	.	.	.	.	.	.	.	.	..	.	.	.	.	.	1	.
262	do. & McDowell	.	.	.	.	.	.	.	.	90	.	.	.	.	.	1	.
263	Tanner . . .	April, 1852	56	.	1	1	.	11 years	Ceased 11 years	1	1	.	1	.	.	1	.
264	do. . . .	Mar. 1853	46	1	.	.	.	8 months	Irregular . .	1	1	.	.	.	.	1	.
265	Teale . . .	April, 1854	21	.	1	1	.	18 months	Ceased 18 mos.	5	1	.	.	Slight	.	1	.
266	Trowbridge .	April, 1827	22	1	.	.	.	R* 2 years	.	..	1	.	.	Adhesions	.	1	.
267	do. . . .	1841 (?)	20	.	1	.	.	.	.	..	1	.	.	.	.	1	.
268	Trustram . .	1844	18	.	.	.	.	.	.	..	1	.	1	.	.	1	.
269	Unknown. . .	.	34	.	1	.	.	*	8 years	..	1?	.	.	Adhesions	.	1	.
270	do. . . .	.	48	.	.	.	.	1 year	.	6	.	1	.	do.	.	1	.
271	do. . . .	.	.	.	.	.	.	.	.	..	.	1	.	do.	.	1	.
272	do. . . .	.	22	.	.	.	.	.	.	..	1	.	.	.	.	1	.
273	do. . . .	.	.	.	.	.	.	.	.	..	.	1	.	Adhesions	.	1	.
274	do. . . .	.	.	.	.	.	.	.	.	..	.	.	.	.	.	1	.
275	do. . . .	.	.	.	.	.	.	.	.	..	.	.	.	Adhesions	.	1	.
276	do. . . .	.	.	.	.	.	.	.	.	..	.	.	.	.	.	.	.
277	do. . . .	.	.	.	.	.	.	.	.	..	.	.	.	.	.	.	.

Description.	Died.	Cause of Death.	Recovered.	Period of Recovery or Death after Operation.	Why not removed.	Complications and Remarks.
Cystic, 5½ lb.	1		1	3 months .		Ascites; menses regular since.
Cystic	1	Hemorrhage	1	36 hours .	Adhesions	Ascites.
Cyst.	1		1	96 hours .	do.	Five gallons pus escaped during operation.
			1	10 days .		
Solid and cystic, 3½ lb.	1		1	6 weeks .		Accused of pregnancy; ligatures cut close.
Lardaceous, 12 lb.	1		1	9 weeks .		Ascites; began during pregnancy.
Cystic	1		1	3 weeks .		Three pregnancies during growth; 3 times ruptured.
Uterine.			1		Tumor of uterus	
Cystic			1		Adhesions	Ascites; wound healed; in few weeks, refilled and died.
Cystic sarcoma			1	1 month .		Ascites; ligature escaped into abdomen; well three years after.
Cyst, 31 lb.			1	7 weeks .		
Fibrous, 9 lb.	1	Pneumonia (?)	1	7th day .		Fibrous and cerebriform ovary.
Cystic	1	Hemorrhage	1	11 hours .	Adhesions	Died from suppuration of cyst afterwards.
			1	21 days .	No tumor	Left ovary enlarged.
						Prostitute; ovaries sound; thickened omentum.
Cystic	1	Hemorr. from pedicle		3 days		
Cystic and solid, 30 lb.	1	Shock		4 hours		Chronic peritonitis.
	1			3 days		
Scirrhus	1		1	25 days		
			1			No details.
	1	Secondary hemorr.		Some days		Animal ligature.
No tumor	1				No tumor	Ascites; intestines agglomerated by adhesions.
Cystic			1	6 weeks		
Malignant	1	Peritonitis		5½ days		Disease in broad ligament; ovary healthy; hemorrhage.
Multilocular	1	Hemorrhage		22 hours		Pedicle fastened to external wound; colon in front.
Cystic			1	15 days	Adhesions	Pregnancy and miscarriage; tent; vinous injection; child after.
Not ovarian			1	Several w'ks	No tumor	Ascites, chronic peritonitis, and enlargement of colon.
Cystic			1			
Fibrous, 46½ lb.	1	Peritonitis		3 days	Adhesions	Uterus perforated by trocar. (Sargent.)
	1	Tetanic symptoms		6th day	do.	(Froriep.)
	1				do.	(A. B.)
No tumor	1		1		No tum. mentioned	(C. D.)
	1					(E. F.)
	1					(G. H.)
Solid and cystic	1			5 days	Adhesions	(Hargraves.)
	1					(Lee.)
	1					(do.)
	1					(do.)
	1					(do.)
	1	Peritonitis		6th day		(Mr. W. B-k-s-w.)
Fibrous, 7 lb.	1		1	19th day		Procidentia uteri; peritoneum dissected for ligature, cut close; menses appeared.
Encephaloid, 8 lb.	1	Peritonitis		39 hours		Vaginal and cyst. prolapse.
Cystic and solid, 18 lb.	1		1	25 days		
Scirrhus, 25 lb.	1	Hemorrhage		On table		
Cystic, 16 lb.	1		1	65 days		Ligature escaped.
do. 16½ lb.	1		1	5 weeks		Hemorrhage and phlebitis.
do. 28 lb.	1		1	17th day		
	1		1		Adhesions	Tapped afterwards.
Cystic and solid, 14 lb.	1	Peritonitis		9th day		Ascites; and fibr. tum. of uterus, not remov'd.
	1		1		No reasons	From disease also, apparently.
Cystic	1		1	4 days		Ligature cut close.
do.	1		1		Adhesions	Tapped seventeen times since.
do.	1		1		Adhesions	Died of disease in two months.
do.	1		1			Ascites; procidentia uteri; children after.
Lardaceous, 6½ lb.	1		1	25 days		
	1		1	2 days		
	1		1			

To the preceding list might be added the cases mentioned by Velpeau, Berard's case,¹ Roux's² case of extraction of an ovarian cyst through the posterior wall of the vagina, and the five additional cases claimed to have been operated upon by Burnham:³ but they are either too vaguely stated, or on insufficient authority; and I content myself with merely mentioning them.

A large number of cases also are on record of hernia of the ovary, in which the organ was removed; among others, Nourse's case,⁴ given in Pott's works; two cases by Lassus;⁵ several in Boivin and Dugés; one by Guersant;⁶ and Dr. Parker, of New York, reports⁷ an operation for femoral hernia, in which the fimbriated extremity of the Fallopian tube was removed, though the ovary itself appears to have been returned into the abdomen. But such cases hardly come under the head of Ovariotomy, in the usually received meaning of that term.

Before proceeding to an analysis of the cases, it is necessary to allude to the different methods of operation which have been employed. These differences consist chiefly in the length of the incision; the removal of the cyst entire, or after reducing its size by evacuation of the contents; and the management of the ligatures.

The importance of careful preliminary and consecutive treatment is of course, as in most other capital operations, agreed to by all. The temperature of the room in which the peritoneum is to be so largely exposed, it is generally stated, should be about seventy-five degrees; though, by some few, this is considered a matter of little importance. Another detail, to which it is perhaps worth while to allude, is the practice

¹ See p. 2.

² Dict. de Médecine, t. xxii. p. 563.

³ See p. 51.

⁴ Usually called "Pott's case." It was a double hernia; and both ovaries were removed.

⁵ Path. Chirurgicale, Paris, 1809, t. ii.

⁶ Archives Générales, t. xxvii. p. 501.

⁷ Med. Times, January, 1855.

of marking, with iodine or nitrate of silver, transverse lines upon the surface, to be crossed by the incision, as a guide to the proper introduction of the sutures. If the abdomen is greatly distended, and the incision large, it is obvious that these marks would, though not absolutely necessary, much facilitate the accurate juxtaposition of the edges of the wound in the collapsed abdominal walls.

The advocates of the large section, or major operation, used by McDowell, Lizars, &c., claim that by it the tumor is extracted not only with greater facility, but entire, thus preventing the escape of any part of its contents into the peritoneum; also that adhesions, if any, and the ligatures, are more easily managed, — advantages which, in their view, more than counterbalance the additional wound, and handling of the peritoneum.

The credit of proposing the small incision, or minor operation, is given usually to Mr. Jeaffreson (of Framlingham, England); though it had been alluded to by William Hunter,¹ and was practised by Dr. Nathan Smith and others in this country, some time before. Professor Sacchi² attributes this proposal to Monteggia. It was designed thus to obviate the large wound, and exposure of the peritoneum and viscera, by evacuating the contents of the sac, then drawing the latter through, and applying the ligature. When practicable, it would certainly seem to be the most rational proceeding; but the existence of adhesions, a thickened sac, or solid contents, may render such a course impossible or very difficult, protracting the operation, and requiring possibly the introduction of the hand to effect the removal, or an extension of the wound to such a degree as to render it, after all, a large incision.

As before stated, it appears to me that the management of the ligatures and the divided pedicle is of vastly more impor-

¹ Med. Observations and Inquiries, vol. ii.

² Bulletin Général de Thérapeutique, &c., t. iv. 1833, p. 311.

tance than any fixed rule as to the size of the incision. Setting aside errors of diagnosis, the great dangers of the operation are peritonitis and hemorrhage. Any device, therefore, which removes the necessity of leaving a bundle of ligatures and a sloughing stump within the abdominal cavity, will materially increase the chances of escape for the patient.

In some few cases, it will be noticed that hemorrhage has arisen from unobserved vessels in the divided adhesions (as in No. 75); but, in the majority of instances, it came from the pedicle itself, either from shrinking of the tissues or slipping of the ligature, and this notwithstanding the utmost care in the application. Various contrivances have been suggested for the prevention of so fatal an accident, — as tying the pedicle in different portions by a double ligature, passed through and closed in opposite directions; two double ligatures through at right angles, and tying as in *nævus*; carrying the ends of the ligature through the pedicle on the distal side of the stricture; securing each vessel separately, and then surrounding the whole pedicle by a circular ligature, &c.

A plan for diminishing the liability to peritonitis was adopted by Dr. Van Buren, of New York,¹ which consisted in dissecting away the peritoneal covering of the pedicle sufficiently for the application of the ligature beneath it, thus preventing its being involved in the constriction; and the same thing was practised soon after by Mr. Erichsen,² of London, with the valuable addition to it of bringing the pedicle, ligatures, and all, to the external wound, and fastening them there, as was done in Mr. Duffin's³ case. This plan, in whole or in part, has since been carried out in several instances.⁴ To diminish irritation, the ligatures have sometimes been cut close, removing the ends. In 1846, Mr. Handyside,⁵ with the same view, carried the ligatures through the recto-vaginal cul de sac into the vagina; as did

¹ No. 281, Synopsis.

² No. 168, Synopsis.

³ No. 149, Synopsis.

⁴ Nos. 185, 201, 77, 265, 214, and 80, of Synopsis.

⁵ No. 188, Synopsis.

also Dr. Peaslee, in 1855.¹ In one of Dr. Atlee's cases (No. 14), no ligature whatever was required, torsion being sufficient.

ANALYSIS OF THE CASES.

I. Of the three hundred cases, the operation was completed, by the removal of the tumor, in 208 ; which, excluding four not mentioned, gives us 70.27 in 100.

The tumor could not be removed in 78 ; or one in $3\frac{31}{9}$, or 26.35 in 100.

The tumor was partially removed in 10 ; or one in $29\frac{3}{5}$, or 3.37 in 100.

The removal of the tumor is not mentioned in four.

II. In one case, the result is not stated ; of the remaining 299 operations, 179 recovered, 120 died ; or one in $2\frac{59}{120}$, or 40.13 in 100.

III. Of the 208 cases in which the operation was completed, 119 recovered, or 57.21 in 100 ; 89 died, or one in $2\frac{30}{89}$, or 42.78 in 100.

IV. The above gives us, therefore, 300 operations for the removal of ovarian disease, of which 119 only were successful *in the removal of the disease and the recovery of the patient* ; or one in $2\frac{62}{119}$, or 39.66 to 100, — less than two-fifths.

V. Of the 78 cases in which the tumor could not be removed, 55 recovered from the operation, or 70.51 in a hundred ; 22 died, or one in $3\frac{6}{11}$, or 28.20 in 100 ; and in one the result is not given.

VI. Of the ten cases in which the tumor was partially removed, five died, and five recovered from the operation.

This does not include those cases in which the cyst or tumor was emptied or incised, or a tent introduced. Of the 88 cases included in these two sections, V. and VI., in which the operation remained unfinished, 27 died ; or one in $3\frac{7}{27}$, or 30.68 in 100.

¹ No. 235, Synopsis.

VII. Of the above 88, in which the operation was abandoned or only partially completed, the causes of failure were as follow : —

68 from adhesions ; of whom 24 died, 44 recovered.

One was from the bulk of the tumor being uterine ; both ovaries diseased ; recovered.

Three uterine ; not ovarian ; recovered.

One “no pedicle” found ; recovered.

One tubal foetation ; result not stated.

One “loose hydatids,” and adhesions ; recovered.

One pediculated tumor of spleen ; died fifth day.

One solid tumor ; not ovarian ; died ; neither ovary affected.

Three no reason given ; recovered.

Eight no tumor found ; seven recovered ; one died. These eight cases, in which there was no tumor, were as follow : —

No. 162, fecal collection, or intestinal spasm ; recovered.

No. 191, mesenteric glands ; recovered.

No. 192, no tumor could be found at the time of operation, though it apparently existed ! recovered.

196, spinal curvature ; obesity and flatulence ;¹ recovered.

No. 255, thickened omentum ; recovered.

No. 262, intestines massed together by adhesions ; died.

No. 267, chronic peritonitis, and enlargement of colon ; recovered.

No. 272, no tumor ; no explanation ; recovered.

VIII. Of 92 cases of more or less extensive adhesions, with removal of the ovary, 48 recovered ; or 52.17 in 100. 44 died ; or one in $2\frac{1}{11}$, or 47.82 in 100.

IX. Of 50 cases non-adherent, with removal of the ovary, 34 recovered ; 16 died ; or one in $3\frac{1}{3}$, or 32 in 100.

¹ Mr. Jeaffreson mentions an instance in which a surgeon tapped with a fatal result. The “sole affection was a fatty abdomen.” Lond. Med. Gaz. vol. xxxiv. p. 702.

X. The incision is mentioned in 260 cases. Of these, 117 were short, 143 long.¹

Of the 117 short incisions, the operation was completed in 60; of whom 37 recovered, 23 died; or one in $2\frac{1}{2}$, or 38.33 in 100.

Of the 117 short incisions, the operation was abandoned or incomplete in 57; of whom 44 recovered, 13 died; or one in $4\frac{5}{8}$, or 22.80 in 100.

Of the whole 117, 81 recovered, 36 died; or one in $3\frac{1}{4}$, or 30.76 in 100.

Of the 143 long incisions, the operation was completed in 123; of whom 72 recovered, 51 died; or one in $2\frac{7}{17}$, or 41.46 in 100.

Of the 143 long incisions, the operation was abandoned or incomplete in 20; of whom 11 recovered, 9 died; or one in $2\frac{2}{9}$, or 45 in 100.

Of the whole 143, 83 recovered, 60 died; or one in $2\frac{2}{3}$, or 41.95 in 100.

XI. Of the 76 cases in which previous tapping is noted, in 53 there were adhesions; in 14, there were no adhesions; in 9, adhesions not mentioned.

In the 14 who had been tapped, in whom no adhesions were found at the operation, five had been tapped twice; one six times; one, many times; and seven, once.²

XII. Of the 221 cases in which the age is given at the time of the operation, the average is 34.33 years:—

Under 20,	8 cases;	4 recov'd,	4 died;	or $\frac{1}{2}$,	or 50.00 in 100.
Fr. 20 to 30,	74	„ 45	„ 29	„ or 1 in $2\frac{1}{2}$,	or 39.18 „ 100.
„ 30 „ 40,	72	„ 43	„ 29	„ or 1 „ $2\frac{1}{4}$,	or 40.27 „ 100.
„ 40 „ 50,	48	„ 27	„ 21	„ or 1 „ $2\frac{6}{11}$,	or 43.75 „ 100.
„ 50 „ 60,	16	„ 12	„ 4	„ or 1 „ 4,	or 25.00 „ 100.
„ 60 „ 70,	3	„ 2	„ 1	„ or 1 „ 3,	or 33.33 „ 100.

¹ See definition, p. 34.

² These do not include cases tapped, within a few days of the operation, for purposes of diagnosis.

The youngest, age 17 (No. 185), recovered ; the oldest, age 68 (No. 17), recovered.

XIII. Of the 124 *ovarian* cases, in which the duration of the disease at the time of the operation is given, there were of less than —

1 year's growth,	11;	7 recovered,	4 died;	or 1 in $2\frac{3}{4}$,	or 36.36 in 100.
1 to 2 yr's,,	27; 15	,,	12	,, or 1	,, $2\frac{1}{4}$, or 44.44 ,, 100.
2 ,, 3 ,, ,,	20; 13	,,	7	,, or 1	,, $2\frac{6}{7}$, or 35.00 ,, 100.
3 ,, 4 ,, ,,	12; 9	,,	3	,, or 1	,, 4, or 25.00 ,, 100.
4 ,, 5 ,, ,,	12; 8	,,	4	,, or 1	,, 3, or 33.33 ,, 100.
5 ,, 6 ,, ,,	7; 4	,,	3	,, or 1	,, $2\frac{1}{3}$, or 42.85 ,, 100.
6 ,, 7 ,, ,,	7; 4	,,	3	,, or 1	,, $2\frac{1}{3}$, or 42.85 ,, 100.
7 ,, 8 ,, ,,	8; 5	,,	3	,, or 1	,, $2\frac{2}{3}$, or 37.50 ,, 100.
8 ,, 9 ,, ,,	2; 1	,,	1	,, or 1	,, 2, or 50.00 ,, 100.
9 ,, 10 ,, ,,	2; 1	,,	1	,,	
10 ,, 15 ,, ,,	7; 7	,,	0	,,	
15 ,, 20 ,, ,,	4; 1	,,	3	,, or 1	,, $1\frac{1}{3}$, or 75.00 ,, 100.
20 ,, 25 ,, ,,	2; 0	,,	2	,,	
Many ,, ,,	3; 2	,,	1	,, or 1	,, 3, or 33.33 ,, 100.

In one case (No. 83), the disease is said to have commenced at nine years of age ; in another (No. 86), at twelve years three months ; and in four cases (Nos. 82, 150, 281, 287), at sixteen years, — the first of these (No. 82) having borne one child at thirteen and one at fifteen years !

XIV. In 62 cases of ovarian disease, in which the condition of the catamenial function is noted at the time of the operation, 30 continued regular ; 22¹ irregular, three of which are noted as becoming regular after the removal of the disease ; one, age twenty-one, in whom it had never appeared, became regular soon after ; in 7, there was suppression, one of them becoming pregnant afterwards ; in 2, menorrhagia, both of which proved to be malignant.

XV. Of 209 patients mentioned, 142 were married,² 67 sin-

¹ Several of these probably menorrhagic.

² Or known to have had connection. It does not follow that the disease is more common in the married, if it be true, that few women, in proportion, pass through life single.

gle; of the 142 married, 84 recovered, 57 died (in one the result not stated); or one in $2\frac{9}{15}$, or 40.42 in 100; of the 67 single, 43 recovered, 24 died; or one in $2\frac{1}{4}$, or 35.82 in 100.

XVI. Of the two women pregnant at the time of the operation, one (No. 15) died, the thirtieth day, of starvation; no miscarriage. The other (No. 31) miscarried the second day, and recovered.

Conception occurred once during the growth of the tumor in eleven instances (Nos. 7, 15, 31, 70, 101, 112, 151, 176, 246, 169, 266); and, in the last two, abortion followed. In two instances (167, 186), conception occurred twice during growth of the tumor; in one case, it occurred three times (No. 247).

Conception occurred after the removal of the disease in fourteen instances; in one of them (164) five times, one being of twins. In three of these cases the right, and in three the left, ovary had been removed; eight not mentioned. In three other cases, in which the operation was abandoned, and the patient cured eventually by "incision, and introduction of tent," children were borne afterwards; and, in two of these cases, the disease was in the right, and in one in the left, ovary.

XVII. Of 103 cases specified, the right ovary alone¹ was diseased in 44; or one in $2\frac{1}{4}$, or 42.71 in 100. The left was diseased in 35; or one in $2\frac{3}{5}$, or 33.98 in 100. Both ovaries were diseased in 24; or one in $4\frac{7}{4}$, or 23.30 in 100.

Of these, the right ovary was removed 41 times; and 30 recovered, 11 died; or one in $3\frac{8}{11}$, or 26.82 in 100. The left ovary was removed 35 times; and 19 recovered, 16 died; or one in $2\frac{3}{16}$, or 45.71 in 100. Both ovaries were removed 13 times; and 5 recovered, 8 died; or one in $1\frac{5}{8}$, or 61.53 in 100. In 14 instances, the operation was abandoned, with 8 recoveries to 6 deaths.

¹ Ramsbotham thinks the left ovary to be more commonly affected, as does Chereau also. Bluff gives thirty-one of right to twenty-three of left; and Dr. Clay (loc. cit. p. 285) says that four-fifths of the cases he has seen have been of the right ovary.

XVIII. Both ovaries and the uterus were removed in three cases (85, 102, 119); one recovered, two died. Both ovaries, and a fibrous tumor of the pelvis, were removed in one case (25); death ensued. The left ovary and the uterus were removed in one case (236); death ensued. The left ovary, and a fibrous tumor of the uterus, were removed in one case (84); death ensued.

XIX. The cause of death is stated in 85 of the fatal cases:—

Peritonitis,	36 ; or 1 in $2\frac{1}{3}$, or 42.35 in 100 fatal cases.
Hemorrhage,	20 ; or 1 „ $4\frac{1}{4}$, or 23.52 „ 100 „ „
Exhaustion,	12 ; or 1 „ $7\frac{1}{2}$, or 14.11 „ 100 „ „
Shock,	4 ; or 1 „ $21\frac{1}{4}$, or 4.70 „ 100 „ „
Pneumonia,	2.
Diarrhœa,	2.

And of each of the following, one ; i. e., inflammation, inflammation and obstruction of bowels, ileus, gangrene of jejunum, nausea and diarrhœa, starvation from nausea, diabetes, tetanic symptoms, and bursting of hepatic abscess.

Time of death given in 31 cases of peritonitis averages the eighth day ; in 17 cases of hemorrhage, twenty-two hours.

One case of hemorrhage died the sixth day (source not given); one died the fifth day, do.; and the remaining one died “some days” after the operation.

XX. In 102 cases in which the period is given, we have eight days, within a fraction, as the time at which death resulted.

In 81 cases in which the period is given, we have a fraction over thirty-one days as the period of recovery.

XXI. Of six cases (77, 80, 149, 201, 214, 265) in which the pedicle was fastened in the external wound, thus removing from the peritoneum the irritation caused by the ligatures and the strangulated stump, four recovered, two died.

In two cases (185, 281), where the ligature was applied beneath the peritoneal investment of the pedicle, recovery

followed; and in one case (No. 168), where both these proceedings were adopted, the patient recovered very rapidly.

XXII. Errors, illustrative of the difficulties of diagnosis: —

Nos. 8 and 248, the mass of the tumor proved to be uterine.

Nos. 15 and 31, pregnancy co-existed.

Nos. 85, 102, 119, both ovaries and uterus found to be diseased.

Nos. 162, 196, 255, 262, 267, 272, no tumor found after incision.

No. 106, large number of "loose hydatids;" ovary, uterus, liver, and spleen diseased.

Nos. 157, 173, 180, 199, 239, fibrous tumors of uterus; no ovarian disease.

No. 161, solid tumor, not ovarian.

Nos. 70 and 191, mesenteric tumors.

No. 238, pediculated tumor of the spleen.

No. 192, tumor could not be found, though probably existing!

No. 264, malignant disease in broad ligament.

No. 148, tubal foetation.

No. 6, diagnosticated right ovary, left removed.

No. 227, diagnosticated extra-uterine pregnancy, or encysted ovary; proved to be fibrous.

No. 236, diagnosticated non-adherent cyst of right ovary; proved to be fibrous tumor of uterus, involving left ovary.

No. 166, very movable before operation; proved to be so adherent that it could not be removed.

No. 269, uterus tapped.

Nos. 74 and 75, extirpation not intended, but rendered necessary, after the operation was begun, by vascularity of the cyst.

To these might be added those in which the operation could not be completed, owing to unforeseen adhesions (setting aside exploratory operations, perhaps), and many in which

unexpected disease was found of the uterus, liver, or peritoneum. How many of those cases which proved to be malignant disease of the ovary would have been attempted, had this been foreseen, we have no means of deciding. Probably the majority of them could be ranked, with safety, under the head of errors of diagnosis.

From this analysis, we may gather the following facts:—

In three-tenths of the cases (29.72 in 100, Section I.), the operation could not be completed.

The rate of mortality in all the operations (Section II.) was 40.13 per cent.

In seven-tenths of the cases (Section III.), the operation was completed, with a resulting mortality of 42.78 per cent.

In the unfinished operations (Section VI.), the mortality was 30.68 per cent.

The proportion between the whole number of recoveries, *after the removal of the tumor*, and the whole number of operations undertaken in the hope of such a result, we find to be (Section IV.) as 39.66 to 100, or less than two-fifths!

Adhesions caused the abandonment of the operation in 22.06 per cent of the whole number, or caused 77.27 per cent of the failures (Section VII.).

No tumor was found in nearly three per cent of the whole (2.66 per cent, Section VII.).

Where adhesions complicated the removal, 47.82 per cent died; where no adhesions complicated the removal, 32 per cent only died.

Of the whole number of short incisions, 30.76 per cent died; of those completed, 38.33 per cent died; of those not completed, 22.80 per cent only died.

Of the whole number of long incisions, 41.95 per cent died; of those completed, 41.46 died; and of those not completed, 45 per cent died.

Previous tapping does not always cause adhesions.

As far as these cases go, the mortality is least between the ages of fifty and sixty, and greatest under twenty.

The mortality is least when the disease is of between three and four years' duration.

There is but little difference in the mortality between the married and single.

The right ovary is more often diseased than the left, though less so than often stated.

Of the above fatal cases, 42.35 per cent were from peritonitis, 23.52 per cent from hemorrhage.

Death ensued, upon an average, the eighth day; the average of deaths from peritonitis being also the eighth day; and those from hemorrhage in twenty-two hours.

And, finally, in more than ten per cent of the cases, important errors of diagnosis occurred.

We have seen, in Section IV., that more than three-fifths of the operations are unsuccessful; and, by Section II., that 40.13 per cent are fatal. Dr. Churchill makes it one in $2\frac{3}{4}$, or over 36 per cent; Dr. Cormack, over 38 per cent; Dr. Robert Lee, over 37 per cent; Mr. Phillips, over 39 per cent; Dr. Ashwell's Table, over 36 per cent. Dr. Atlee makes the mortality only $26\frac{1}{2}$ per cent; but this is done, as will be seen on reference to the last six sections of his analysis, by throwing out of the calculation twenty-seven cases which were complicated with other diseases, six cases in which accidental occurrences were supposed to be the cause of death, and three cases in which death did not ensue for some time after the operation. Now, these same complications are just as likely to be met with, in the same frequency, in all future operations, unless the differential diagnosis of ovarian disease is greatly improved. The question is not, what the rate of mortality would be if this diagnosis could be perfected, if only just the right cases were taken, if only no accidents happened; for these always have occurred, and always will occur, in a certain proportion of cases, even under the most skilful

hands. The true question is, What is the rate of mortality, from this operation, in the present state of our medical and surgical science? It is manifestly for the advantage of the operation itself, to say nothing of the unfortunate subjects of it, that a perfectly fair answer should be given to this question. If these tables are correct, that answer is, that 40.13 per cent are fatal, and that two-fifths only are successful. Nor does this look so forbidding, when we compare it with other capital operations. The lowest rate of mortality, after amputations of large limbs, is shown in Dr. Hayward's statistics¹ of the Massachusetts General Hospital; 22.69 per cent only resulting fatally. Elsewhere, however, we find it to range much higher; viz.:—

In the New-York hospital,² 39.68 per cent of amputations of large limbs result fatally. In the Paris hospitals,³ from 1836 to 1840, of the thigh amputations in pathological cases, thirty-eight per cent died, and, in traumatic cases, forty-nine per cent. M. Textor, of Wurtzburg, gives forty-three per cent as the rate, in operations for strangulated hernia, between 1836 and 1842; and a writer in the "British and Foreign Medical Review," April, 1853, gives still more fatal results. He says, that, if we take the major amputations of the limbs, primary and secondary, in Paris, the rate of mortality is upwards of fifty per cent; in Glasgow, forty per cent; in British hospitals, upwards of twenty-eight per cent. Mr. Syme says that the evidence of hospital statistics shows that sixty to seventy per cent die after thigh amputations. Mr. Phillips, from nine hundred and eighty-seven cases, makes it forty-four per cent. Mr. Curling, from one hundred and thirty-one cases of thigh and leg, rates it at forty-one per cent. Dr. Inman, from three hundred and fifty-eight cases of amputations generally, primary and secondary, for accident or disease, gives over thirty-two per cent. Fenwick, four thousand nine

¹ Boston Med. and Surg. Jour. October, 1850.

² Lente's Statistics; Trans. Am. Med. Assoc. 1851.

³ Malgaigne's Statistics in Gaz. des Hospitaux, June, 1844.

hundred and thirty-seven cases ; deaths, over thirty-two per cent. Cox, from eighty-four cases hip-joint, rates it as over sixty-nine per cent. Sir Astley Cooper and Dr. Inman, in operations for hernia, make over forty-six and forty-seven per cent respectively. And Mr. Phillips and Dr. Inman, for ligature of large arteries, make the mortality thirty-three per cent.

But it is often said that such a comparison as this is not a fair one, for the reason, that, in most capital operations, the only alternative is death. This assertion is doubtless true of many of the traumatic cases, in which amputation, or ligature of large arteries, is performed, and in hernia also : but ligature for aneurism, amputations for necrosis, articular disease, or other pathological states, derive no advantage from this argument ; for they are certainly as amenable to medical treatment as are those cases of ovarian disease which have usually been operated on.

It is objected also to this operation, that cystic tumors of the ovary are of slow growth, and that temporary relief may usually be obtained by tapping, or medical treatment. It has already been shown that these medical resources are useless, if not injurious. And, even if tapping were free from the dangers attributed to it,¹ it is, at the best, a mere palliative, and, after being once done, requires repetition at constantly diminishing intervals ; death ensuing in a large proportion of cases, — according to Dr. Bright,² within four years of the first operation. Nor is the statement as to their slow growth a correct one ; for, with rare exceptional cases, death from exhaustion may be said to result, upon an average, in five or six years, excluding cases of doubtful diagnosis. Section XIII. of the analysis shows that about one hundred, out of one hundred and twenty-four, were willing, at any rate, to submit to a dangerous operation for relief before the tumor had attained eight years of growth.

¹ Dr. Buehring, of Berlin, says that tapping carries off one in five in those cases in which it is performed for the first time. *Monthly Retrospect of Med. Sciences*, vol. ii. 1849.

² *Guy's Hospital Reports*, April, 1838, p. 188.

As to the plan of establishing suppurative inflammation of the cyst with an external opening, by any of the methods reviewed, although the cases recorded thus far show a lower rate of mortality than extirpation, yet the operation can be considered as having been successful in only 30.13 per cent; and even of these, the *cyst* only being obliterated, there is no security against the development of another; while, of the cases of entire extirpation of the organ diseased, 39.66 per cent, at least, are *radically* cured. The remaining proposal, i.e., injection of the cyst, though it bids fair to prove a most valuable resource, is applicable only to cases of unilocular, non-adherent cyst, even should a more extended experience show that it is as free from danger as it is claimed to be. Various other objections have been advanced to Ovariectomy; but they can all be made to apply with equal force to every kind of capital operation, as Professor Simpson¹ has conclusively shown.

By far the strongest objection would appear to consist in the imperfection of the diagnosis. Were this removed, the rate of mortality would doubtless be less than that of any of the larger operations; and, even in its present state, we have seen that it compares not unfavorably with them.

If then, in view of the foregoing statistics, we may claim for the operation, that it is, in certain cases, justifiable, which are these cases? or, in other words, "Under what circumstances may the operation be regarded as safe and expedient?"

In view of the fact that the tumor is occasionally of very slow growth, and that the general health of patients suffering from cystic disease of the ovary is ordinarily good, unless inflammation of the cyst supervenes, or some accident causes its rapid development, we should say that it was neither safe nor expedient to put in force any operative procedure, before constitutional symptoms are excited by the suffering from dis-

¹ Obstetrical Works, vol. i. p. 263, art. Ovariectomy.

tention, and the consequent disturbance of the functions of digestion, respiration, &c.¹

The fear of adhesions, or other future contingency, does not render an operation safe or expedient, as has been often urged ; for those contingencies may never arise.

If any operation is contemplated, the above period (i.e., that in which serious constitutional disturbance begins to show itself) should be selected ; farther delay diminishing the chances of a favorable result, by the progressive loss of health and strength, and the liability to repeated attacks of subacute inflammation of the cyst, and the formation of adhesions.

It is neither safe nor expedient to operate, if there be any signs of a malignant diathesis.

The safety of the operation is greatly diminished by the co-existence of uterine or other visceral disease ; and hence it is neither safe nor expedient to operate until every known method of diagnosis has been exhausted, — as the touch, the use of the uterine sound, auscultation, percussion, &c. ; after which, no case, no matter how positive apparently the diagnosis may be, should be operated upon until after previous *tapping*, that every certainty, short of actual sight, may be possessed.

This preliminary tapping should be followed by moderate pressure, in the hope of checking the refilling of the cyst, as such favorable results have occasionally followed ; and the patient is in no worse condition for ulterior measures, even should the tapping prove useless.

If, after the removal of the characteristic fluid, it again accumulates, no “bold incisions” are justifiable until the smallest possible exploratory incision has shown that no adhesions exist, so far as this can be ascertained by the introduction of a finger or probe.

¹ Section XIII. shows, that, in the majority of the operations, the mortality is small, in comparison, when the disease has existed at least three or four years ; which is probably not far from the period in which these constitutional symptoms would begin to show themselves, in a fair average of cases.

Under the above conditions alone do we think that Ovariectomy can be considered both safe and expedient. But the farther question now presents itself, Is not this operation expedient, even though it may be less safe, in many of the remaining cases?

The answer to this depends entirely upon how far it is justifiable for a surgeon to assume the risk of cutting short a life, which, at any rate, must terminate in a few weeks or months at most, in the very uncertain hope of prolonging it by operation. This is a question of medical ethics which each individual conscience must answer for itself, and upon which an honest difference of opinion may, and in fact does, exist. If, however, we take as our guide the surgical practice in many malignant diseases, — the treatment, by amputation, of inveterate cases of necrosis, articular disease, &c., the operations of embryotomy, or Cæsarian section, — we should say, without hesitation, that very many of the more desperate cases of ovarian tumor were legitimate subjects for operation. Has the surgeon a right to say to one, who, with death staring her in the face, urgently demands, as her last hope of life, such relief as his art may perchance afford, “I dare not assume the responsibility”?

We think, then, that, if the facts are as stated in the foregoing paper, the following conclusions are deducible from them: —

1. The mortality attendant upon Ovariectomy is no greater than it is after other capital operations.
2. The mortality resulting from extensive incisions of the peritoneum is generally over-estimated.
3. Fully developed cystic disease of the ovarium tends rapidly to a fatal result.
4. No method of treatment heretofore devised for it is so successful as extirpation; excepting, possibly, that by injection with iodine, of the results from which, we have, as yet, insufficient statistics.
5. The operation is unjustifiable in the early stages of the disease.

6. After active development has commenced, with the supervention of constitutional symptoms, the sooner the operation is performed, the greater the chance of recovery.

7. No rule can be laid down as to the length of the incision, other than the general one, — that, the shorter it is, the less the mortality; and that, therefore, the primary incision should always be small, and extended afterwards as may be necessary, according to the exigencies of each particular case.

8. If, after the operation is commenced, extensive adhesions should be discovered, either the complete abandonment of the intended extirpation, or the attempt to cause suppuration, and gradual contraction of the cyst, by means of a permanent external opening, are to be preferred to the division of the adhesions, and completion of the operation as originally designed.

Although, from the statistics given, the conclusion has been formed, that, under given conditions, extirpation is the safest remedy which can be used for the radical cure of encysted ovarian tumors, it must be confessed that many elements to an entirely satisfactory decision are still wanting, — such as the natural history of the disease, uninfluenced by surgical treatment of any kind, and the results of tapping and spontaneous rupture, as shown by a larger number of cases than have yet been collected. As a contribution to this end, it was originally intended to append, in addition to the following section upon diagnosis, a table of some fifty cases each of tapping and spontaneous rupture, together with a considerable number of cases resulting fatally, in which no surgical treatment was adopted: but other avocations have delayed the fulfilment of this design; and, as they are not called for by the question proposed, the idea is, for the present at least, abandoned, and this portion of the Essay concluded in the words of Mr. Walne,¹ who, after recommending that the operation be undertaken only in well-selected cases, says, “Still less let me be supposed to advise that any sur-

¹ See Ashwell on Dis. of Women, p. 666.

geon should engage in its performance who has not, by habits of operating, — yet more by long habits of careful observation and treatment of disease generally, and by very considerate and studious examination of the nature and connections of this particular disease, and the tendencies of the viscera, which may be involved in mischief by an ill-judged operation, or ill conducted after treatment, — qualified himself to cope with difficulties from which it is unreasonable to expect an exemption.” Words of sound judgment, which are commended to the careful consideration of that numerous class of individuals who look upon Ovariotomy as a very simple operation, requiring no particular surgical skill.

DIAGNOSIS OF OVARIAN TUMORS.

It would seem, to one whose attention had not been particularly directed to this subject, an easy matter to avoid grave errors in the diagnosis of such cases. But the preceding paper gives abundant proof that such errors have been made, and that, too, not by inexperienced persons only; but that the abdomen has been freely opened by distinguished surgeons, — men in the habit of operating, and fully aware of their responsibilities, — who, to their dismay, have found either an entirely different disease, or no disease at all, — “only flatulence and fat.” Mr. Liston may well be pardoned for characterizing all such proceedings as “belly-ripping.”

Beside the cases above mentioned, it may be useful to cite here a few additional illustrations of the difficulties of diagnosis; proving, not only that other tumors may be mistaken for ovarian, but also that ovarian disease is sometimes mistaken for something else.

Dr. Francis¹ reports the case of a woman, age thirty-six, with two children, and who supposed herself to be pregnant.

¹ New-York Med. and Phys. Jour. vol. ii. 1823.

Her attendant pronounced it extra-uterine foetation ; and, at the end of nine months, an incision was made, "several inches in length," between the umbilicus and the right anterior iliac spinous process. No child was found, but ovarian cysts, discharging a thick, whitish fluid, several pints of which were removed. After much constitutional irritation, she recovered. In a few months, the sacs refilled, were tapped by Dr. Mott, and two gallons drawn, of the color and consistence of thin glue ; died in two weeks ; autopsy, — multilocular disease of right ovary, and some sarcomatous tumors, weighing, in all, thirty pounds.

Boinet¹ gives an account of a remarkable tumor, which the best surgeons were unable to decide upon. A consultation was held of Roux, Blandin, Robert, Montaine of Lyons, Recamier, Jobert, Martin-Solon, and others. Opinions were divided between pregnancy, extra-uterine pregnancy, encysted ovary, fecal accumulation, "épanchement sanguine," collection of blood in uterus, &c. She was under observation eight months, in the Hospitals Hôtel Dieu, Beaujon, and St. Louis ; the tumor eventually disappearing after an attack of diarrhœa.

Mr. Chalice² reports the case of a young woman supposed to be six months pregnant, and who confessed to a single connection six months previously. The usual signs were considered to be sufficiently well marked, with the exception of the irregular continuance of the menses. Exactly at the end of the nine months, she and all concerned thought that she was in labor. The pains continued for a week before an error was suspected ; was tapped three times before death. An examination revealed encysted malignant disease, both ovaries having disappeared.

Dr. Shattuck³ reports a case of ligature of uterine polypus. Death ensuing in three weeks, an inflamed ovarian cyst was

¹ Encyclo. des Sciences Méd. July, 1840, from Gaz. Médicale.

² Southern Med. and Surg. Jour. July, 1848, from London Lancet.

³ Records Boston Soc. for Med. Improvement, vol. ii. p. 134.

found, extending from the pubes to the ensiform cartilage. It had given no signs of its presence during life, the slight abdominal swelling being attributed to effusion from peritonitis.

Mr. Harvey¹ relates a case of hydatid disease of the liver, which was considered, during life, to be ovarian; and Mr. Shearley also relates a similar case, in which, however, the patient was tapped, and had a plug inserted into the wound. The plug could not be removed, and she died.

Druitt² gives a case in which pregnancy was diagnosed, the sounds of the fetal heart being apparently audible. It proved to be ovarian dropsy.

Dr. Robert Lee³ relates a case in which a woman had had the rectum divided by incision for supposed stricture. After death, an ovarian cyst was found between the uterus and rectum. He gives several cases of mistaken diagnosis.⁴ Were it advisable, this list might be much extended: a few will be mentioned hereafter.

Without entering into the pathology of dropsy of the ovary, it is sufficient for our present purpose to allude to the fact that it varies very much, in its anatomical characters, from the simple serous vesicle, or cyst, rarely rising above the pelvic brim to the solid fibrous growths with cysts attached, the scirrhus, encephaloid, or colloid disease, or the compound or multilocular tumors, growing to such an extent as to exceed in size the ordinary limits of the gravid uterus at full term. As might be inferred, the symptoms attending these different degrees vary accordingly; in some instances, being so trifling as to occasion no suspicion of a disease which post-mortem examination first reveals; and, in others, presenting an assemblage of painful and distressing symptoms, not exceeded, perhaps, in any morbid change to which the human organism is liable.

¹ Lancet, vol. i. 1849, p. 183.

² Lancet, vol. ii. 1849, p. 587.

³ Ovarian and Uterine Dis. p. 29, case 9.

⁴ See also McFarlane's cases, Med. Chir. Rev. July, 1835; Lassus, vol. i. p. 281; Hamilton, Med. Chir. Rev. July, 1836; Seymour, Lancet, vol. i. 1838-39, p. 214.

The age at which ovarian dropsy is most frequently developed is usually stated to be from twenty-five to thirty-five ; in other words, that period of life in which the generative system is in its highest state of activity. Of two hundred and twenty-one cases,¹ the average was thirty-four years at the time of the operation. This, allowing four years for the previous duration of the disease (which is more than the tables warrant), would give us thirty years. The same section shows comparatively few after the age of fifty ; while in six cases it commenced before sixteen, and one even as early as nine, if the account may be depended on. Frank's case began at thirteen, the patient living to eighty-eight.² Prof. Mayer found both ovaries converted into cysts in an infant, who died of convulsions when seventeen days old ;³ and Neumann met with the disease as early, in one instance, as eight years of age. Dr. Cox reports a similar case,⁴ of a healthy nursing infant dying of convulsions, and in whom the ovaries were dropsical.

Of two hundred and nine cases,⁵ one hundred and forty-two, or nearly sixty-eight per cent, were married ; and, in the majority of cases, the patients are sterile. The common supposition, that the strumous diathesis favors the development of this disease, is doubtless well founded ; but neither on this point nor on that of sterility are the reports sufficiently detailed to enable one to derive any positive conclusion from the cases I have collected.

The causes are very variable. It is oftentimes directly traceable to injuries received, as blows, falls, kicks, &c. ; and, in a very considerable number of instances, it follows immediately upon parturition. If we may judge by the comparatively small number of prostitutes affected, over-excitement

¹ See Section XII. p. 111.

² Copland, Dict. art. Dropsy.

³ L'Expérience, 1838, from Journal de Graefe, t. ix.

⁴ Proceedings of New-York Path. Society, September, 1854, in New-York Jour. of Med.

⁵ See Section XV. p. 112.

of the sexual organs would not appear to be a predisposing cause.

It may be stated as a rule, to which there are but rare exceptions, that, in the early stages of simple cystic disease of the ovary, general constitutional symptoms are entirely wanting, the health not being at all, or to but an inappreciable degree, impaired (an important fact in relation to the differential diagnosis); nor is it at all uncommon for the cyst to arrive at its extreme development with no other disturbance to the health than such as arises from physical causes, as impeded respiration, or interference with the urinary or digestive functions. In the greater number of cases, the disease is unnoticed until the appearance of the tumor above the brim of the pelvis; and this is more particularly true of the ordinary form of the affection. If solid or malignant, its interference with the functions of the pelvic viscera attracts earlier attention; many such cases being first recognized in consequence of the obstruction presented to the distention of the pregnant uterus, or to the descent of the child in labor.¹ When, however, the tumor, no longer confined to the pelvis, has attained such dimensions as to compress and displace the neighboring parts, the symptoms already alluded to, as dependent on these physical causes, become exceedingly distressing, and ultimately induce fatal exhaustion. Dyspnœa, often so great as to prevent rest in the recumbent posture; indigestion, in its most aggravated forms; hemorrhoids; prolapsus of the pelvic viscera; various disturbances of the renal function; and constipation,² — are the most prominent.

Before enumerating the principal signs or symptoms met with in ovarian disease, it is proper to state, that, as an indispensable preliminary to all examination, the physician should be well satisfied that the bladder and rectum have been emp-

¹ Mr. Hardy, *Lancet*, vol. i. 1845; also *Med. Chir. Trans.* vols. ii. iii. x. and xxiii. by Merriman, Lever, Park, and Chevalier.

² In one of Dr. Ingleby's cases, the pressure upon the bowels was so excessive, that the patient had but two alvine evacuations in three months! *Lancet*, vol. ii. 1839-40, p. 10.

tied. Many cases could be quoted in which greater attention to this point would have saved mortification to the examiner, and something worse, perhaps, to the patient.

If seen in the earlier stages, the position of the tumor is found, as it rises above the pelvic brim, to be at one or the other side of the mesial line. Dr. Bird¹ attaches little importance to this rule; stating even, that, in the greater number of cases which he had seen, it was described as having begun in the middle of the hypogastric region. But the reports of patients are not always reliable; and this is but an additional proof of what has been already stated; i.e., that the disease may have made considerable progress before its discovery, the tumor gradually assuming a more central position as it rises above the level of the fundus uteri. Blundell² considers this lateral position as "a great characteristic of the disease." Ramsbotham³ also lays stress on this, as "one of the best diagnostic marks." Dr. Bright⁴ gives a similar opinion; and such is the general expression of the best authorities. The tumor, oval in shape, is generally prominent, movable, and circumscribed both visibly and to the touch. Often, even after it has made considerable encroachment on the abdominal cavity, it retains, to a certain degree, its lateral position. If fluctuating, the fluctuation is confined to the tumor itself, not being perceived in other portions of the abdominal cavity. After the tumor has reached the umbilicus, its superior outline is more or less defined by the movements of inspiration and expiration; a marked sulcus sometimes existing below the epigastrium.

Another point of the highest importance in its bearing upon diagnosis, as will be more apparent hereafter, is the position antero-posteriorly with reference to the abdominal viscera, which these tumors assume when free from the pel-

¹ *Lancet*, vol. i. 1843-44; and vol. ii. 1846.

² *Principles and Practice of Med.* p. 816.

³ *Lond. Med. Gaz.* vol. xvi. p. 645.

⁴ *Guy's Hospital Reports*, April, 1838, p. 184.

vis. This position is next to the anterior parietes of the abdomen, as proved by percussion, which gives here a dull sound, the intestines being crowded back and to the sides. The diagnostic value of this fact was first shown by Rostan. In this connection, however, the possibility of complication with a distended or adherent uterus is not to be overlooked.

In a certain number of cases, hemorrhoids, arising from pressure upon the abdominal venous circulation, will be noticed. Flatulent distention is another effect often present from the same cause. Anasarca is not usual in ordinary ovarian dropsy. When existing, it is commonly confined to one extremity, and indicates that the pelvic portion of the tumor, at least, is of a solid character. The subcutaneous abdominal veins are generally much enlarged, and more so in proportion to the size of the tumor.

The catamenia usually continue,¹ with more or less of regularity, unless both ovaries are diseased; and even then, except they be entirely disorganized, this function may continue.² It is perhaps worthy of notice here, that, in certain cases in which the menses are either irregular or entirely suppressed, this function is restored to its normal condition after removal of the disease by Ovariectomy.³

The mammary sympathies are sometimes evidenced by swelling and tenderness of the breasts; and instances are given in which milk is said to have been secreted, though such cases are doubtless rare.⁴

Having noticed these general characteristics, we may now refer to the other means of information upon which the differential diagnosis must greatly depend, — as percussion, &c.

¹ Section XIV. of Analysis, — fifty-four cases out of sixty-two.

² Dr. A. T. Thompson and Mr. Potter each reports cases of this kind. Lond. Med. Gaz. vol. xxxvii. p. 488; and vol. xli.

³ See Section XIV. p. 112.

⁴ Ramsbotham, Lond. Med. Gaz. vol. xvi. p. 645; Vater, L'Expérience, February, 1838, p. 97; Jeaffreson, Lond. Med. Gaz. vol. xxxiv. p. 645. The patient thought herself to be eight months pregnant. It was a case of ascites, though both ovaries proved to be diseased.

The development of the cyst being anterior to the viscera, it is obvious that percussion must give a dull sound over all that space occupied by the tumor. The intestines being crowded backward and upward, the resonance, if any there be, will of course be found to correspond to this displacement. Cruvulhier¹ says, that in no possible case, and in no degree, can the tympanitic sound be heard anterior to the ovarian cyst. This statement is often repeated; but, though in the vast majority of cases true, it needs qualification. It is, for instance, no uncommon thing for ascites to co-exist, or for the intestines to be so bound down, by adhesions from chronic peritonitis or other causes, as to hinder their rising and floating upon the surface. In other cases, a transverse layer of intestine has been found firmly adherent to the front of the tumor,² which, if distended with air, would give resonance. The umbilical region may also be resonant from the gaseous distention of a degenerated cyst, adherent to the parietes anteriorly.³

By percussion and palpation, a sense of fluctuation is ordinarily recognizable in the circumscribed tumor. This, of course, is more evident in unilocular cysts, containing a thin fluid, and when the patient is in the erect position. It is limited to the tumor itself, not extending to the lateral regions. It varies much in degree, according to the thinness of the fluid and its containing wall, and is often confined to particular portions of the tumor, as in multilocular or semi-solid growths.

Farther information may be derived from percussion by changing the position of the patient during examination; for it will be found, that, unlike ascites, the same region remains dull, whether she be prone or supine, upon one or the other side, standing, sitting, or reclining.

¹ Dr. Kilgours's paper, in Lond. and Edin. Monthly Jour. of Med. Sciences, vol. iii. 1843, p. 527.

² Pp. 77-9, Mussey's and Norman's cases, Nos. 222, 231.

³ Watson, Practice of Physic, vol. ii. p. 365; Bright, Guy's Hospital Reports, April, 1838, p. 235.

Auscultation may be of great importance negatively, particularly when doubts exist as to pregnancy, but, taken alone, is of little positive value. A distinct placental souffle, and the sounds of the fœtal heart, doubtless indicate pregnancy: but the absence of these is by no means conclusive; for the fœtus may be dead. Instances are given in which the placental souffle was imitated by pressure of the growth upon the abdominal vessels, or by the circulation of the large vessels occasionally found ramifying over an ovarian cyst.

Dr. Atlee¹ attaches importance to the pulsations of the tumor itself, and the aortic impulse, as being more apparent in solid or encysted growths than in cases of ascites.

By vaginal or rectal examination, fluctuation is sometimes discoverable on percussion of the parietes; and this is more particularly the case in the earlier stages, the tumor being in the recto-vaginal cul de sac. Unlike acute ovaritis or pelvic abscess, pressure here causes no pain. It may indeed be possible, by this vaginal examination, to isolate the tumor entirely from the uterus.² The cervix uteri is found to be elevated, possibly beyond the reach of the finger; or, if attainable, it is pushed aside, or otherwise displaced before or behind, and unchanged in length, while the os retains its normal appearance as to size and shape. Exceptional cases are met with, where there is prolapsus of the uterus, bladder, or vagina: but, in such, it is to be presumed that the growth is solid, not cystic; and, unless the mass be wedged in the pelvis, the prolapsus occurs only in the later stages.

The uterine sound, likewise, will often be negatively serviceable at this stage of the examination, by proving that the disease is something else than ovarian.

Tapping, though strongly confirmatory or otherwise of the diagnosis, ought to be resorted to only in the later stages of ovarian disease, and when, after careful and repeated exa-

¹ Am. Jour. Med. Sciences, July, 1844, p. 64.

² Dr. Ashwell (loc. cit. p. 643) relates an instance in which disease of both ovaries was thus diagnosticated.

mination by other means, no reasonable doubt exists; for, as we have already seen (p. 7), it is by no means free from danger. It should, however, be considered as an indispensable preliminary to any operation for Ovariotomy. The information to be derived from it relates not only to the actual existence of ovarian disease, but also to the presence or absence of adhesions, and to the character of the cyst itself, whether simple or compound, &c. As the fluid escapes, the cyst, unless extremely thin or strongly adherent, may be felt slowly subsiding into the pelvis; and if nodulated, multilocular, or partly solid, these characters become gradually more evident to careful pressure in proportion as the bulk of the fluid is removed. The presence of an indurated mass remaining, after the withdrawal of ascitic fluid from the abdomen by tapping, may be simulated by a mass of adherent false membranes. Dr. Bright gives a case of this kind,¹ in which the patient was tapped fourteen times; and, in each instance, the fluid was supposed to be from an encysted ovary.

The mere fact again, that no fluid escapes through the canula after puncture, is no proof of the absence of cystic or other enlargement of the ovary: for it may either be a solid, fibrous, or malignant growth; or, if cystic, with contents so gelatinous as not to flow readily, even through a much larger incision.²

When fluid is obtained, it differs from the serum of ascites, this being usually clear, though occasionally tinged with blood or bile; while the liquid from an ovarian cyst is albuminous, containing, possibly, cholesterine. It is now well known that the contents of the different cysts of a multilocular tumor may be entirely unlike; but, as a general rule, it is safe to assert, that, the more albuminous the fluid, the greater the probability of its being encysted. Dr. Hamilton³ considers the appearance of

¹ Med. Chir. Trans. vol. xix. p. 200.

² Houston's case, p. 11.

³ Med. Chir. Rev. July, 1836.

the fluid very decisive as between ovarian dropsy and ascites ; the former “being amber-colored, and of the consistence of calves’-foot jelly.” This, however, cannot always be relied upon ; for, in undoubted cases of ovarian disease, the fluid is sometimes as thin and clear as that from the peritoneal cavity.¹ Microscopic examination of this fluid, it might be supposed, would throw some light upon the diagnosis ; but, as yet, such experiments have led to no decisive conclusion, which, unsupported by other evidence, would be sufficient to base a positive opinion upon.

The presence of the peculiar albumino-cerous matter, described by Dr. Bostock in the second, fourth, and fifteenth volumes of the “Medico-Chir. Trans.,” is of little practical diagnostic value, it not being peculiar to ovarian cysts.

Such, then, are the general symptoms and signs of dropsy of the ovary. None of them can be relied upon as positively pathognomonic. Let us, therefore, refer to those diseases or abdominal enlargements which simulate, more or less, ovarian disease, and *vice versâ*, and compare their symptoms. They may be enumerated as follows, somewhat in the order of their importance : —

Pregnancy.

Ascites.

Fibrous tumors of uterus.

Enlargements of kidney, liver, or spleen, and omental tumors.

Hydatid disease of the peritoneum.

Spinal curvature. }

Psoas abscess. }

Hysterical tympanitis. }

Fecal accumulation. }

Retroversion or retroflexion of the uterus. }

Hydrometra. }

Distention of bladder by retained urine.

¹ Atlee’s case, Am. Jour. Med. Sciences, July, 1844.

Recto-vaginal hernia, or prolapsus of the ovary. }
 Pelvic abscess. }
 Muscular contraction of the abdominal parietes.

Pregnancy. — While the ovarian disease remains confined to the pelvis, or during its earlier stages, it may readily be mistaken for pregnancy, owing to the similarity in certain of the symptoms, — such as disturbance of the vesical functions, occasional suppression of the menses, the existence of gastric and mammary sympathies, &c. The following distinctions, however, may be recognized: In the first months of pregnancy, the os is situated lower in the vagina, and patulous; the cervix shortened; and the umbilicus more sunken than natural. In ovarian disease, the os is elevated (with the exceptions mentioned on page 106), not patulous or softened; the cervix of its natural length, the umbilicus retaining its normal appearance; and fluctuation from the cyst may sometimes be recognized by the finger through the posterior vaginal wall. At a later period, the pregnant uterus appears above the pubes, in the mesial line. Ovarian enlargement, on the contrary, with rare exceptions, first shows itself in either groin. The movement from side to side, of an ovarian tumor, is not so appreciable (if at all so) to the finger applied to the os uteri, as would be the case in a similar experiment upon the distended womb; while this latter yields no circumscribed fluctuation, unless in the rare instances in which it might be due to dropsy of the amnion. The development of pregnancy is gradual, steady, uniform, and regularly traceable from month to month, — points in which a difference could hardly fail to be observed in the more irregular development of cystic disease. The characteristic sensation of ballottement, recognizable in pregnancy, is wanting in ovarian disease. The sounds of the foetal heart and the placental souffle, usually so decisive of the former, though sometimes simulated by ovarian tumors, would hardly be, both of them, audible at the same time in any given case. In pregnancy,

there is no distention of the subcutaneous veins; and, in ovarian disease, the foetal movements are wanting; though the somewhat similar sensations now and then caused by flatulence, and the pulsations of the aorta, may require discrimination.

Pregnancy, it is true, may exist, and neither foetal movement, the placental or cardiac sounds, be recognized, as in the case of a dead foetus; but this is rarely retained a sufficient length of time to lead into any practical error. In addition to this, the catamenia are wanting; while, in ovarian disease, they are more frequently present than absent.

Pregnancy may supervene upon ovarian disease. Many cases which I have given presented this complication; and others of a similar kind are related by authors.¹ In such an event, besides the ordinary signs of pregnancy, it may be possible to recognize, and isolate from each other, the two tumors. Either abortion, or spontaneous rupture of the cyst, would be likely to occur if the cyst were large. One practical deduction may be drawn from these facts; i.e., that, where there is absence of the catamenia in any case of supposed ovarian disease, nine months, at least, should be allowed to elapse before serious thoughts are entertained of Ovariectomy.

Between an ovarian tumor and extra-uterine pregnancy, the diagnosis is more difficult. In such a case, besides the usual signs of pregnancy, the sympathetic accidents, as pain, &c., arising from the development of the foetus in its unnatural position, would be our only dependence.

Ascites. — Distention of the abdomen from peritoneal effusion is usually traceable to some cardiac, hepatic, renal, or other organic disease. There is, therefore, in the earlier stages, a corresponding impairment of health. In dropsy of the ovary, the patient, for a long time, retains her usual condition. In the former disease, an anasarcaous condition of

¹ Douglass's Philosophical Trans. vol. xxv. 1707, twice pregnant; Tunaley, Lancet, vol. ii. 1853, p. 612; Montgomery, "Signs of Pregnancy," p. 191, in which both ovaries were diseased.

both lower extremities is a common symptom ; in the latter, it is rarely present, and, if so, is quite likely to be confined to one limb. In ascites, the secretions of the kidneys, particularly, are diminished ; while, in ovarian disease, they remain unaffected, at least until great pressure is caused by the increasing growth. In ascites, the neck of the uterus, though sometimes retracted or even obliterated, is not displaced from its axis ; and vaginal examination reveals no tumor in the pelvic cavity (but the neck is often obliterated, and the os retracted like an umbilicus), both the cervical displacement and the abdominal growth being recognizable not uncommonly in ovarian disease. In ascites, when the patient lies down, a change of shape, a decided subsidence or flattening, is noticed in the abdominal protuberance, the fluid gravitating with every change of position : it is also more generally and equably diffused and fluctuating from the beginning, and presents a more uniform surface than an ovarian tumor ; which latter is more circumscribed, unequally prominent and movable, generally presenting a well-defined ovoid tumor, which retains its form in all positions, and fluctuates only over a limited space, the fluctuation being less decided, and not so apparent from one lumbar region to the other, as in the former. In ascites, as the intestines are in part floating on the surface of the fluid, we find, on percussion, a distinct resonance, which remains uppermost, with corresponding dulness below, in placing the patient in different positions ; while, in ovarian dropsy, the dulness is confined to the anterior umbilical or pubic surface, whatever changes of position are made.

If both diseases co-exist, in addition to the signs above enumerated, the tumor may sometimes, it is said by Boivin, Duges, and others, be recognized, through the ascitic fluid, by the points of the fingers pressing firmly down upon the anterior surface. The difficulty of accomplishing this increases, of course, in proportion to the size of the cyst ; and, if there be great distention, it may be impossible to displace the fluid sufficiently to feel any tumor beneath. In such a

case, however, tapping would be equally proper in both diseases; and this would probably solve the mystery, either by the character of the fluid, or the recognition of a resulting tumor formed by the collapsed cyst, if cyst there be.

Fibrous tumors of the uterus. — Between these and ovarian disease, the diagnosis is often exceedingly difficult. Their lateral position; occasional fluctuation, or elasticity resembling it; the trifling disturbance of the general health and functions of the surrounding viscera, — may all be sources of error.

Excessive menorrhagia would point rather to fibrous disease of the uterus than to ovarian. Mr. Brown (*loc. cit.*) says that there is neither elasticity nor fluctuation in solid uterine tumors; but this is incorrect. In Parkman's case,¹ the elasticity so closely resembled fluctuation as to deceive all who observed it. She was tapped, by a distinguished surgeon in the country, on the supposition of encysted disease, and again in the hospital here, with negative results, of course; and, even after removal, the mass, before being incised, was so decidedly fluctuating (I speak from personal observation of it), that few, who were strangers to its history, would have doubted its containing fluid. The most reliable information, in doubtful cases, is that afforded by the uterine sound. In fibrous disease, the uterine cavity is elongated or stretched, varying from its normal axis, and the morbid mass moves with the movements of the sound; none of which conditions obtain in ovarian disease. According to Dr. Simpson, if this instrument shows the tumor to be placed anterior to the plane of the uterus, it certainly is not ovarian, the ovary lying posterior to that plane. By means of the sound, it also becomes possible to fix the organ during examination; and, if fibrous disease of the uterus and encysted ovary co-exist, we are enabled to isolate them so as to recognize the two tumors. The whole paper² deserves careful study; and the recent American edition renders it of easy access to all interested.

¹ Synopsis, No. 239; see also Peaslee, No. 236.

² Obstetric Works, Edin. vol. i. p. 57.

Enlargements of the kidney,¹ liver, spleen, and omental tumors, or the development of cysts or tumors therefrom, or from between the peritoneum and abdominal parietes, may be mistaken for ovarian disease, and *vice versâ*.

The situation of the tumor in its commencement, and the direction of its growth, is an important element in this diagnosis, and, if seen sufficiently early, may be quite decisive as to its not being ovarian, by showing a distinct sulcus between them and the pubes, unoccupied by any swelling.

The specific constitutional symptoms belonging to diseased kidney, liver, or spleen, would be wanting in ovarian disease. This latter develops from below upward; while any affection of the liver, which could simulate it, would be seen to develop "downward, and to the left." Enlargement of the spleen grows obliquely downward, "beginning from the left, and overreaching inferiorly towards the right."² In enlargement of the spleen, the bulk of the tumor, in its earlier stages, is felt under and behind the ribs, extending into the lumbar region, with its lower edge sometimes serrated or notched. Dr. Bright (*loc. cit.*) says, "Of all the errors made in the diagnosis of kidney disease, the most frequent has been to consider the enlarged kidney as an ovarian or uterine tumor;" though he had never met with the converse error. A close attention to the condition of the urinary functions, as

¹ Dr. Bright (*Guy's Hospital Reports*, April, 1839, p. 212) mentions a case of ovarian tumor, which, during life, was supposed to belong to the liver, together with many cases illustrative of the difficulty of deciding between ovarian and renal tumors.

Many years since, I was consulted by an old lady, nearly eighty, with reference to an inguinal tumor, apparently emerging from the pelvis, circumscribed and fluctuating, which, but for the presence of certain renal symptoms, or in a younger patient, might easily have been mistaken for an ovarian cyst. Examination, post mortem, showed the left kidney converted into one large cyst, and extending to the pelvic brim.

Mr. Greenhalgh (*Lancet*, vol. ii. 1853, p. 612) relates a case of cerebriform disease of the kidney, weighing twenty-seven pounds, which was pronounced during life, by gentlemen skilled in the diagnosis of abdominal tumors, "to be ovarian, and fit for removal."

See also *Synopsis*, 238, Prince's case of pediculated tumor of the spleen.

² Ramsbotham; *Ashwell, Dis. of Women*, p. 646.

compared with ovarian disease, should rectify any such error ; while resonance on percussion, proceeding from the overlapping intestines, would be additional proof of the enlargement not being ovarian. Tumors of the omentum, besides their original position and the direction of their growth, are generally more knotted ; hard, transverse ridges often being felt beneath the parietes. They are also more painful than ovarian tumors, and more likely to be accompanied by ascites.¹ The diagnosis between ovarian and parietal cysts can only be derived from the circumscribed position of the latter, their limited movability, and the absence of the symptoms of the former as obtained by vaginal examination.

Hydatid disease of the peritoneal cavity has been mistaken for ovarian disease.² In these cases, the uniform development ; the absence of any peculiar prominence or circumscribed tumor ; the character of the fluctuation, which, in Mr. Clay's case, was "more ascitic than cystic ;" the implication of some of the abdominal viscera, as evidenced by their constitutional symptoms, — are all of them conditions which should lead to suspicion that the disease is not ovarian at least. In such cases, also, we might expect to find, unlike ovarian enlargements, the peculiar "*frémissement hydatique*" described by M. Piorry.

Spinal curvature and *psaos abscess* have both been mistaken for ovarian dropsy ;³ but percussion, touch *per vaginam*, and careful examination of the spine, present a ready means for the detection of such errors. The case of *psaos abscess* alluded to by Mr. Bell was detected by vaginal examination. The tumor, which was full and fluctuating when the patient stood erect, lost its tension and fulness in the horizontal position. It will be noticed also, in lumbar abscess, that the leg is flexed instinctively, so as to relieve the painful pressure by relaxation of the *psaos* muscle.

¹ Macfarlane's cases, July, 1835, Med. Chir. Rev.

² See Synopsis, 106, Clay's case.

³ Lancet, vol. xii. 1827, Mr. Bell's case ; also Synopsis, No. 196, Lizar's case.

Hysterical tympanitis, and *fecal accumulations* in the colon, have both been the source of grave errors in the diagnosis of ovarian dropsy. The state of the umbilicus, "which, in such cases, is apt to be considerably sunk;"¹ the condition of the functions of the nervous system and digestive organs; and the results of percussion already described, — ought to lead to a correct discrimination between them and the disease in question. If doubt remains, however, the effect produced by a judicious use of purgatives and carminatives would probably be sufficient for its resolution.

Retroversion or retroflexion of the uterus, or *hydrometra*, may possibly be confounded with ovarian dropsy: but the slow growth and gradual development of the symptoms of the latter, and the absence of the specific and often painful symptoms of the former, which it is unnecessary to recapitulate here; above all, the use of the uterine sound, and examination *per vaginam*, — are sufficient for the prevention of such mistakes. In hydrometra, the uterus rarely extends much above the pubes, the menses are absent, and the os firmly closed.

Distention of the bladder by retained urine. — Mr. Brown (loc. cit.) reports an instance of this kind, caused by pressure upon the neck of the bladder by a retroverted uterus, which was mistaken for ovarian enlargement. If the caution heretofore given as to the employment of the catheter be heeded, such a mistake could not occur.

Prolapsus of the ovary into the recto-vaginal cul de sac, and *pelvic abscess*, are mentioned by authors as among the affections which have been mistaken for cystic disease of the ovary. But the acute pain caused by pressure through the vagina or rectum is not found in dropsical enlargements of the ovary; while the tenderness, heat, doughy elasticity or fluctuation, and constitutional symptoms, present in cases of pelvic abscess, together with its immediate antecedents, are sufficiently distinctive. Should a doubtful case arise, the

¹ Montgomery, Signs of Pregnancy, p. 94.

exploratory needle, as suggested by Prof. Simpson, would probably settle the question.

Muscular contraction of the abdominal walls, it has been asserted, may simulate ovarian disease; but it is hardly credible that the minute and protracted examination which any supposed ovarian tumor would elicit should fail in the detection of such an error. Such cases, too, we should expect to find accompanied by other hysterical symptoms, which would lead to suspicion of the true nature of the case.

Finally, it being satisfactorily ascertained, in any given case, that the morbid growth is ovarian, it becomes necessary farther to ascertain whether it is of a malignant nature or not, and also as to the existence of adhesions to the surrounding parts, before the question of the propriety of Ovariotomy can be decided.

The principal distinctions between malignant and non-malignant ovarian growths are as follow: In the former, the pain is severe, often from the beginning; rarely so in the latter. In the former, the growth is rapid,¹ often accompanied by ascites and anasarca; in the latter, usually slow, and rarely anasarca. The former is accompanied, particularly after the earlier stages, by the cancerous cachexia, possibly by glandular swellings, or the development of unmistakable malignant disease elsewhere. Malignant growths also, as a general rule, are less fluctuating, and more likely to give evidence of adhesions. Dr. Blundell² thinks that a round, firm tumor, in the side of the upper pelvis, especially if tuberos, turns out to be scirrhus: but this is a very uncertain test; for many non-malignant tumors, fibrous or even multilocular, have a decidedly tuberos feel.

Dr. Walsh³ says that it is not possible to point out any series of symptoms "whereby simple carcinomatous tumors may be invariably distinguished from other diseased enlarge-

¹ Lebert, des Maladies Cancéreuses, p. 322, says that the longest period which he has known a patient to survive was twenty months.

² Loc. cit. p. 812.

³ On Cancer, Am. ed. p. 315, *et seq.*

ments of these parts." He adds, that "fibrous tumors of the ovary may, when large, be distinguished from scirrhus by their size; from encephaloid by their hardness, inferior elasticity, smoother, non-lobulated surface, and uniform consistence;" "unilocular cysts are non-lobulated," and more fluctuating; "the obscure fluctuation of multilocular cysts resembling more the elastic doughiness of encephaloid;" and, finally, that a very rapid course of the disease furnishes one of the best proofs of encephaloid; which opinion is generally concurred in. It should be stated, however, that clear and decided fluctuation may generally be detected in certain portions of the multilocular variety, though it is not uniform over the whole surface.

Of all the causes of failure to remove the tumor, after the peritoneal section has been made, the existence of adhesions is by far the most prominent.¹ Of eighty-eight cases reported,² in which the operation was not completed, this result was due in sixty-eight to the discovery of adhesions; and of those cases in which the operation was completed, in spite of the adhesions, nearly forty-eight per cent were fatal.³ The importance, therefore, of this part of the diagnosis needs no comment.

The fact of a patient's having been repeatedly tapped, or subject to occasional attacks of peritonitis, certainly renders the existence of adhesions more probable; but no positive indication can be drawn from these antecedents.⁴

¹ Dr. Seymour (*Lancet*, vol. i. 1838-39, p. 214) states, that, in ninety-nine cases out of a hundred, the tumor is adherent to the surrounding textures; but this, apparently, is an exaggeration.

² See p. 80, Section VII.

³ See Section VIII. p. 80.

⁴ See p. 81, Section XI.; to which I will add the following: The *Dublin Hosp. Gaz.* of February, 1846, quoted by *Am. Jour. Med. Sciences*, July, 1846, contains a case by Dr. Kirkpatrick, which was tapped a hundred and twenty-eight times, each followed by symptoms of peritonitis. After death, the adhesions were found to be very slight, admitting of the easy removal of the tumor.

In *London Med. Communications*, vol. ii. p. 123, is a case by Mr. Ford, where, after each tapping, there was circumscribed inflammation about the puncture, though not causing adhesions, as proved post mortem.

In *Am. Jour. Med. Sciences*, April, 1844, is a similar case by Dr. Bissell, the tumor weighing ninety-three pounds!

In *Med. Chir. Rev.* vol. xv. 1831, p. 502, a case is reported, in which, after seve-

Freedom of motion in the tumor, though not altogether decisive, is indicative of the absence of adhesions. The movability is to be ascertained by relaxing the integuments, and, if possible, grasping them in the hand, and moving them about in various directions over the surface of the tumor, noting carefully the effect produced upon the latter. If non-adherent, the tumor may usually be freely moved from side to side beneath the integuments, unless it be so large as to cause great distention. Still many cases are reported, in which, notwithstanding these movements were apparently untrammelled,¹ long and firm bands of adhesion to the parietes were afterwards found. And, at most, it would only show their absence anteriorly; for the mass may be firmly adherent to the viscera posteriorly and laterally, without limiting its movements as observed in front. In fact, the most difficult and dangerous adhesions met with in Ovariotomy are those connected with the omentum and colon.

Another valuable sign, first indicated by Dr. Sibson,² is the effect produced by a full inspiration upon the position of the tumor; it moving, if non-adherent, in correspondence with the diaphragm, descending, or sliding down beneath the integuments, to the extent of an inch or more.

Unequal distention of the abdomen is sometimes supposed to be indicative of the existence of adhesions and solid matter; but if, as I have already stated, it be true that the tumor does not assume the mesial line until after its emergence from the pelvis, this supposition must apply only to those cases in which the tumor has obtained considerable development.

ral attacks of acute inflammation, the cyst was found almost gangrenous, but without the slightest adhesion.

Lancet, vol. i. 1844, p. 525, Atkinson's case, tapped seventy-eight times, and "perfectly unattached."

Philosophical Trans. vol. lxxiv. 1784, Martineau's famous case, tapped eighty times in twenty-five years, and thirteen hogsheads drawn, appears to have been non-adherent, the sac having been removed entire after death.

¹ See Synopsis, Nos. 159 and 242, cases of Dieffenbach and Page.

² Lancet, vol. ii. 1849.

Another and very important sign often met with is the feeling of crepitus, "resembling the crackling of new leather," and which, when present, is a pretty sure indication of adhesions. This sign, originally described by Dr. Bright, in a paper read to the Med. Chir. Soc. of London in 1835,¹ and since confirmed by many others, is "a peculiar sensation communicated to the touch, varying between the crepitation produced by emphysema and the sensation derived from bending new leather in the hand." In every case in which this was felt, he found adhesions after death. It is more marked in the earlier stages of the adhesive inflammation.

Where adhesions to the anterior abdominal parietes exist, auscultation will occasionally reveal a bruit de frottement.²

The effect produced upon an ovarian cyst, by tapping, sometimes affords valuable information. If non-adherent, the collapsed cyst may be felt subsiding gradually to the pelvis, possibly giving a decided inclination to the canula, as the parietal and cystic punctures lose their previous relation to each other; while, if adherent to the parietes, perceptible traction upon them would be noticed. Another effect ought also to be observed, though I have not seen it alluded to; and that is the results of percussion, before and after the removal of the fluid. If the cyst be non-adherent, the dull sound previously existing should be replaced by resonance as it contracts and subsides into the pelvic cavity. This, of course, would depend somewhat upon the thickness of the walls of the cyst; for, if very thin, it might be adherent over a large space without affecting the resonance when emptied, and *vice versa*.

Mr. T. S. Lee³ has proposed injecting the bladder with air, upon the supposition that its ascent would be impeded or otherwise, in proportion to the existence or non-existence of adhesions between the cyst and parietes; but it is not pro-

¹ See Transactions, vol. xix.; also Guy's Hosp. Reports, April, 1838, p. 215.

² Grisolle, Pathologie Interne, Paris, 1844, t. 2, p. 396.

³ Tumors of the Uterus, p. 190.

bable that this could be safely performed to any satisfactory extent.

Dr. Marshall Hall¹ suggests, as a means of elucidating this point, the propriety of making a small puncture, through which a fine probe is to be introduced, and swept around the surface of the tumor.

I have thus endeavored to give a condensed summary of those signs upon which the diagnosis of ovarian tumors must depend. Many of the points here briefly alluded to would profitably admit of extensive amplification : but this would be inconsistent with the limited time and space allotted to me ; and it is believed that all of the most important have been sufficiently dwelt upon for the purposes of this Essay.

It is a remark commonly met with, that no farther improvement need be looked for in the diagnosis of ovarian tumors ; but it is hardly credible that the resources derivable from chemistry and the microscope are yet exhausted. In this direction, if in no other, there is still ample room for more minute researches, from which a greater degree of perfection may be confidently anticipated.

¹ Lancet, vol. i. 1843-4, p. 787.

ERRATA.

- Page 4, line 16 from top, for "schirrous" read "scirrhous."
- „ 10, line 2 from bottom, for "results" read "result."
- „ 19, line 8 from bottom, and elsewhere, for "symphisis" read "symphysis."
- „ 25, line 2 from bottom, for "symptomes légères" read "symptômes légers."
- „ 26, line 3 from top, for laudanisées" read "laudanisés."
- „ 84, line 15 from top, for "diagnosed" read "diagnosticated."
- „ 125, line 14 from top, for "Blaudin" read "Blandin."
- „ 125, line 17 from top, for "sanguine" read sanguin."

PUBLICATIONS

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Rational Therapeutics ;

A PRIZE ESSAY.

BY WORTHINGTON HOOKER, M.D.,

OF NEW HAVEN.

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· 1857.

PRIZE ESSAY.

RATIONAL THERAPEUTICS;

OR,

THE COMPARATIVE VALUE OF DIFFERENT CURATIVE MEANS, AND
THE PRINCIPLES OF THEIR APPLICATION.

"NATURÂ DUCE."

BY WORTHINGTON HOOKER, M.D.

OF NEW HAVEN.

Extracts from the Records
OF
THE MASSACHUSETTS MEDICAL SOCIETY.

At a Meeting of the Councillors, Oct. 3, 1856, —

The Treasurer announced, that, through the liberality of one of its Fellows, the Massachusetts Medical Society is authorized to offer the sum of One Hundred Dollars to the author of a Dissertation which may be adjudged worthy of a prize by a Committee appointed by the Councillors of the Society, on the following subject, viz.: "We would regard every approach towards the rational and successful prevention and management of disease, without the necessity of drugs, to be an advance in favor of humanity and scientific medicine."

At a meeting of the Councillors, Oct. 1, 1856, the following gentlemen were appointed the Prize Committee, viz. : —

Dr. AUGUSTUS A. GOULD.

Dr. CHARLES G. PUTNAM.

Dr. FRANCIS MINOT.

Dr. HENRY W. WILLIAMS.

Dr. ANSON HOOKER, Sen.

At the Annual Meeting of the Society, June 3, 1857, —

Dr. GOULD, Chairman of the Prize Committee, reported that six Essays had been received; that the Committee had unanimously agreed upon the Dissertation considered worthy of the prize; and handed to the President the envelope bearing the motto of the Dissertation. On breaking the seal, the author was found to be Dr. WORTHINGTON HOOKER, of New Haven, Conn.

DISSERTATION.

"WE WOULD REGARD EVERY APPROACH TOWARDS THE RATIONAL AND SUCCESSFUL PREVENTION AND MANAGEMENT OF DISEASE, WITHOUT THE NECESSITY OF DRUGS, TO BE AN ADVANCE IN FAVOR OF HUMANITY AND SCIENTIFIC MEDICINE."

THIS proposition¹ embodies a grand lesson, which the medical profession has been learning, especially during the past half-century; and it is yet far from having come to the end of the lesson. The recorded medical experience of this period, which has been so much more busy than any other period in true rational observation, exhibits, in a great variety of ways, a marked tendency to a diminution of active medication. This tendency was but feebly and fitfully manifested during the first portion of this period, and was, for the most part, overborne by a contrary tendency: but its struggles became more and more strong and steady; and, for the past quarter of a century, it has been predominant in the profession. And the result is seen, at the present time, in the prevailing disposition to exalt negative means of cure, above those which are positive; means that quiet, above those that disturb; and simple means, above those whose *modus operandi* is occult, and is the subject of theory and discussion. Drugs, especially those which depress and disturb, have had greater and greater limitations put upon their

¹ It is proper to state, that this proposition is an extract from the excellent Address of Dr. A. A. GOULD, delivered before the Massachusetts Medical Society at its annual meeting in 1855, p. 43.

application ; while other remedial means, not included under this term, have more and more engaged the attention of practitioners.

Allied to this tendency, and somewhat involved with it, is another, which is perhaps to have a still greater influence upon the sanitary welfare of the community. I refer to the disposition, which has so decidedly increased during the last twenty-five years in the profession, to seek out the causes of disease, and to guard against their action. Very appropriately, therefore, is the prevention of disease coupled with its treatment in the proposition which is the subject of this essay. And yet a full consideration of this portion of the proposition would mar the unity of the plan which I have marked out for myself ; and would, besides, require more space than can properly be given to it. I shall therefore bestow upon it here but a brief notice ; and shall afterwards allude to it only incidentally, as its connection with the other part of the proposition shall require.

Although much has been said of late years, by physicians and others, on the subject of hygiene, the community generally manifest but little interest in the prevention of disease, while they have an eager and absorbing interest in whatever relates to its cure. This is seen to be a glaring inconsistency, when we consider that the chief causes of disease are more or less under our control, some of them entirely so ; and the ravages of those which are beyond our control, as the contagions, and some of the causes of epidemics, can be very much lessened by guarding against the action of the common causes of disease. It is often the co-operation of the latter that gives virulency to the former, and occasions their wide diffusion.

The notion which has been entertained by some ultraists, that there would be almost no disease if the laws of life were properly regarded, is extravagant and wild. With all the control that it is possible for us to exercise over the circumstances that surround us, the incidents of our condition must

render us, to a considerable extent, liable to disease. And yet that disease may be in a great degree diminished by preventive measures, is not for a moment to be questioned: indeed, there is not a doubt that it can be diminished vastly more by these than by curative measures.

If it were necessary, statistics might be given bearing upon this point. The opinions also of physicians, whose attention has been particularly drawn to this subject, might be cited. I will content myself with citing but one opinion, as a specimen, — that of the venerable Dr. James Jackson, of Boston, who is always careful and deliberate in his statements. The question put to him was this: “How great a proportion of disease, of suffering, of diminution of physical capacity, of usefulness, and of abridgment of life, comes from sheer ignorance; and which, therefore, we might hope to see averted, if the community had that degree of knowledge which is attainable by all?” His reply was, “I feel assured that the answer should be, *More than one-half.*” When it is brought to mind that the ignorance of parents is included in the inquiry, the justice of the answer will probably be admitted by all who are conversant with the subject.

What has been said of prevention is especially true of chronic diseases. Phthisis, that most common and most destructive of all the maladies of this class, is a striking example. The causes which predispose to it are such, that they can, to a great extent, be either avoided or neutralized. Even the hereditary influence, which acts so largely in the production of this disease, is far from being inevitable in its results. I will not go into an extended notice of this important point, but will barely mention one of the many facts that demonstrate it. In families that have in successive generations shown a disposition to phthisis, it is common to see the female members succumb to it; while the habits of the male members, tending to make them more robust, enable them to resist it. And the difference in this respect

is always lessened when the habits of the male members of the family are sedentary. All the facts which have been gathered in relation to the causes of this disease show that quite a large proportion of its victims might be saved by preventive means ; while curative means succeed in redeeming comparatively few of them.

It is proper to remark here, that many of the measures which tend to prevent the occurrence of some chronic maladies are at the same time the principal means of their cure. This is true of phthisis. Those means which give vigor to the system are alike preventive and curative ; their use being, of course, modified by the varying circumstances of the individual cases. Chronic diseases of a nervous character, and those which are compounds of local affections and a generally debilitated and irritable condition, are cured chiefly by a modified use of the same measures that fortify the system against such diseases. These are measures which, however, do not commonly get the credit which they deserve from the community ; nor even, in all cases, from medical men. The error committed by John Wesley, who was, as Dr. Paris says, “more disposed to attribute his cure to a brown-paper plaster of egg and brimstone than to Dr. Fothergill’s salutary prescription of country air, rest, asses’ milk, and horse-exercise,” has been largely repeated, even up to the present time ; and all quacks, and many even who are in the ranks of the profession, are glad to have this error perpetuated.

What I have said of chronic diseases is true, to a limited extent, of many of the forms of acute disease. Some of the curative measures are among the most important of the preventive measures, — as the free access of pure air, and the exclusion of all sources of excitement and other deleterious agents.

To some extent, then, the prevention of disease coincides with its management ; but, for the reasons before stated,

I shall chiefly confine my attention in this essay to the latter.

My plan will be to illustrate the proposition under consideration from the history of medicine, especially during the last half-century ; drawing such lessons from the points brought out, that I may, in conclusion, indicate certain principles for the guidance of practitioners in the investigation of therapeutics, which may secure the full results contemplated by the proposition, and thus place therapeutics upon a more rational basis than it has as yet attained.

It will be seen that my object is not merely to demonstrate the truth of the proposition. This would be of comparatively little benefit, and might allow of error in a too extensive and indiscriminate abandonment of positive medication. I propose to go beyond this general view of the subject, and gather up those facts in the past experience of the profession which may be of use in discovering the limitations which should be put upon the application of remedies. I shall also endeavor to develop the principles which should guide us in fixing upon these limitations. The tendency of such an investigation will be, not merely to narrow the limits of active medication, but to render it much more definite in its aims, and even to widen the actual range of its efficiency. It is the true way to relieve medicine, so far as it can be done, of the uncertainty which is attached to it.

Up to the latter part of the last century, medication was for the most part of little efficacy. The *Materia Medica* was indeed extensive ; but most of the remedies were of an inert character. Some of the medicines in common use were made up of these remedies compounded together, sometimes to the number of twenty, fifty, or even a hundred ; and, though many of them were even more inert than our modern sarsaparilla, great efficacy was attributed to them, the notions in relation to their mode of action being vague and fanciful. It was from the prevalence of notions of this character that such remedies as frogs' spawn, powder of crabs'

claws, the flesh of vipers, dried toads, &c., were introduced into the multifarious compounds then in vogue.¹ These compounds were generally composed of ingredients so various in their character, that it would be impossible to divine the purposes which they were to accomplish. The noted Theriac of Andromachus, or *Antidotum Mithridatum*, though the number of its ingredients varied somewhat from time to time, had in the Codex Medicamentarius of Paris, under the appropriate grandiloquent name of *Electuarium opiatum polypharmacum*, seventy-two ingredients, thus: Acrid substances, 5; astringent, 5; bitter, 22; indigenous aromatics, 10; umbelliferous aromatics, 7; balsamic and resinous, 8; fetid, 6; narcotic, 1; earthy, 1; gummy or amylaceous, 4; saccharine, 3. One of these ingredients was the flesh of vipers. The narcotic substance was opium; which certainly would do better without such an array of auxiliaries, some of them of quite a questionable character.

That all the medication of those times was marked by such polypharmacy, I do not assert. But although there is some evidence occasionally of a disposition in such minds as Sydenham and Boerhaave to discard it, and adopt a more simple mode of therapeutics, yet they were far from breaking away fully from the prevalent custom, and farther still from making any systematic attempt to rid the *Materia Medica* of its useless and even disgusting rubbish. Some medicines of a decided character, such as cathartics, emetics, and opiates, were, it is true, used, either alone or in connection with the

¹ Some of the enemies of the medical profession have cast reproach upon it, on account of its use of inert and disgusting remedies in olden times. But it is to be recollected that such follies were far from being confined to medical men in those days. Wise men of all classes had mingled with their wisdom most strange and ridiculous notions. And it is also to be remarked, that many of the past errors of the medical profession are now perpetuated in the doctrines and practices of quackery. Thus that masterpiece of quackery, Homœopathy, has such inert remedies as oyster-shell, silica, pulsatilla, &c., to which it attributes most marvellous effects; and, as to disgusting remedies, it surpasses all that can be found in the darkest times of the medical profession in its infusion of the *pediculus capitis*, which Dr. Mure, styled in England "the apostle of Homœopathy," proclaims as the grand remedy for most chronic diseases.

inert articles in such common use ; but they were used sparingly. So also, from the time of Paracelsus and the chemists, mercury and antimony were occasionally used ; but their effects were little understood, and the general prejudice against them was very strong. So strong was the prejudice in France against antimony, that this drug was publicly condemned, and was a long time in gaining the popular favor.

No one exerted so much influence as Cullen in disencumbering therapeutics of its mass of useless materials, and in introducing definite ideas of the action of remedies upon disease. In the preface to his "Practice of Physic," he makes some remarks on previous systems of practice, which show what the state of things was when he came upon the stage. I cannot forbear making an extract. In speaking of the influence of the Stahlian system upon the practice of physicians, he says, "Trusting much to the constant attention and wisdom of nature, they (Stahl and his followers) have proposed the *art of curing by expectation* ; have therefore, for the most part, proposed only very inert and frivolous remedies ; have zealously opposed the use of some of the most efficacious, such as opium and the Peruvian bark ; and are extremely reserved in the use of general remedies, such as bleeding, vomiting, &c."

"Although these remarks," he goes on to say, "upon a system which may now be considered as exploded or neglected, may seem superfluous, I have been willing to give these strictures on the Stahlian system, that I might carry my remarks a little farther, and take this opportunity of observing, that, in whatever manner we may explain what have been called the operations of nature, it appears to me that the general doctrine of *Nature curing diseases* — the so much-vaunted *Hippocratic* method of curing — has often had a baneful influence on the practice of physic, as either leading physicians into, or continuing them in, a weak and feeble practice, and, at the same time, superseding or discour-

aging all the attempts of art. Dr. Huxham has properly observed, that, even in the hands of Sydenham, it had this effect. Although it may sometimes avoid the mischiefs of bold and rash practitioners, yet it certainly produces that caution and timidity which have ever opposed the introduction of new and efficacious remedies. The opposition to chemical medicines in the sixteenth and seventeenth centuries, and the noted condemnation of antimony by the medical faculty of Paris, are to be attributed chiefly to those prejudices, which the physicians of France did not entirely get the better of for near a hundred years after. We may take notice of the reserve it produced in Boerhaave, with respect to the use of the Peruvian bark. We have had lately published, under the title ‘*Constitutiones Epidemicæ*,’ notes of the particular practice of the late Baron van Swieten; upon which the editor very properly observes, that the use of the bark in intermitting fevers appears very rarely in that practice; and we know very well where Van Swieten learned that reserve.”

During the eighteenth century, the influence of those leading minds — Sydenham, Stahl, Hoffman, and Boerhaave — was largely but variously manifested in medical practice. The influence of Boerhaave was continued through Van Swieten, his illustrious pupil, and other prominent physicians, his admirers. Therefore, when Cullen began the study of medicine, he says that he “learned only the system of Boerhaave;” and, when he became a professor in the University, he found this system there in full force. Meanwhile, in France, Lieutaud was the great medical man of the times; of whom Cullen says that he is “very much upon the old plan of following nature, and therefore gives often what I consider as a feeble and inert practice. The *humectantia*, *diluentia*, *demulcentia*, *et temperantia*, are with him very universal remedies, and often those which are alone to be employed.”

There was, during the last century, some advance made in

positive medication ; but it was a hesitating and vacillating movement. It was reserved for Cullen to usher in the new era, for which preparation had thus been made by those who immediately preceded him. He was born in the first part of the last century, in 1712 ; but his full influence was not felt till its close : for, although he was a long time a teacher of medicine, it was not till 1772 that he published his “*Materia Medica* ;” and his “*Practice of Physic*” he published in 1784, only six years before his death.

The writings of Cullen gave to medical practice everywhere a more definite and decided character. Especially did such remedies as calomel and antimony come into more common use. Dr. James Hamilton, of the University of Edinburgh, in a very judicious work on the use and abuse of mercurial medicines, published in 1820, says, that, “for some ages after mercury became an article of the *Materia Medica*, physicians recommended it only on the most urgent occasions ; but, within these few years, British practitioners seem to have overlooked the necessity for such caution, and to exhibit that medicine with very little scruple.” He also says, that “calomel is now in Great Britain almost the universal opening medicine recommended for infants and children ; and a course of the blue pill (which is one of the mildest preparations of mercury) is advised, without any discrimination, for the cure of trifling irregularities of digestion in grown persons.” And the same may be said of its use in this country at that time.

Other remedies of power were used with the same freedom, such as bleeding, emetics, purgatives, opiates, &c. An active medication was generally introduced. “The art of curing by expectation,” so decidedly denounced by Cullen, was in no favor. Disease was to be attacked ; it was to be overcome ; it was to be broken up. This was the language of the times. The recuperative energies of nature were to be trusted but seldom and sparingly. Most practitioners followed the lead of Cullen, who held this language on the subject : “Although

this *vis medicatrix naturæ* must unavoidably be received as a fact, yet, wherever it is admitted, it throws an obscurity upon our system ; and it is only where the importance of our art is very manifest and considerable that we ought to admit of it in practice.” Some went even farther than this. This was true of Dr. Rush, who had such wide and long-continued influence upon American practice. One of the most distinguished physicians in this country recollects hearing him use, in the lecture-room, this strong language in relation to nature’s curative efforts : “ As to nature, I would treat it in the sick-chamber as I would a squalling cat, — open the door, and drive it out.”

The reign of active medication, thus established chiefly by Cullen, reached its culminating point somewhere in the first quarter of this century. It was not introduced by him in full, but was fairly begun, and then was consummated in the course of a few years by those who followed him. This may be very distinctly seen in relation to the use of mercury. Cullen, it must be evident to every one that reads his “ Practice of Physic,” had no idea of the extent to which this remedy was destined to be applied by his successors in the treatment of inflammations and fevers, much less of the common and indiscriminate use of it described by Hamilton.

During the past twenty-five or thirty years, the reign of active medication has been manifestly declining. This decline is to be attributed mostly to the diffusion of more discriminating views in the profession in relation to the operation of remedies. Some, however, are inclined to consider it as owing very much to a change which they suppose to have taken place in the general character of diseases. But the reality of this change is questioned by many who are quite as reliable observers as those who assert that it has occurred ; and their view of the question certainly has some show of reason, if we consider the agencies which are necessary to the production of so great a change as has been claimed to have taken place. For observe, that it is not a

change in the character of any particular diseases, and from one season to another ; but it is a change covering a long term of years, and in the general diathesis of disease. This, it is asserted, is much more disposed to be asthenic than it was in the days of active medication. The fact, so distinctly observed by Sydenham, that epidemic diseases thus change from year to year, from modification of some of the concurrent causes that produce them, has been well established by the observation of physicians since his time. But the change under consideration is altogether different from this : it is a change which could not be produced, unless a continuous influence of some considerable power were exerted during a series of years, alike in healthy and unhealthy seasons, when epidemics were rife, and when they were mild, or even absent, modifying the action of the common causes of disease, so as to alter its general character in all its forms. And, besides, to effect so great a change as has been asserted, so abruptly and so thoroughly, some alteration in the very character of the human system would seem to be required.

It appears clear, then, from these considerations, in addition to the fact that the reality of the change is matter of dispute, that there cannot have been an alteration in the general diathesis of diseases, sufficient to account for the great and general change in medical practice that we have witnessed in the past twenty-five or thirty years.

During the reign of active medication, there were great strifes in the profession. The most opposite modes of practice were advocated in the treatment of the same disease, and physicians were often divided into fiercely opposing parties. I will refer to but a single example. In the first quarter of this century, there was in New England a great contest between two rival parties, in relation to the general character of diseases and their treatment. Dr. Gallup and his followers maintained that diseases were almost wholly sthenic or inflammatory, and therefore depleting remedies were called for ; and, of these, bleeding was by far the most

important. Drs. Miner and Tully, on the other hand, contended that the asthenic disposition predominated; and their remedies were of an opposite character to those of Dr. Gallup. They made large use of opium and stimulants. They also used calomel in connection with these. The language which these two rival schools held towards each other was of the most decided character. Thus Dr. Gallup says, that "it is probable, that, for forty years past, opium and its preparations have done seven times the injury they have rendered benefit on the great scale of the world." And Dr. Tully says of Dr. Gallup's mode of practice, "The lancet is a minute instrument of mighty mischief, — a weapon which annually slays more than the sword. Antimony alone does more injury than all the efficient exciting and supporting agents of the *Materia Medica*." And again: "The King of Great Britain loses every year more subjects by these means (that is, depleting means) than the battle and campaign of Waterloo cost him, with all their glories." Dr. Miner says of the same means, that they "have been the scourge and devastation of the human race for more than two thousand years."

In this, as well as in all other cases in which such opposite views of treatment have been held, the appeal to results was made equally by both the opposing parties; and, from the statements which were made, it would be impossible to decide which practice was the most successful, or, rather, which was the least unsuccessful.

In view of such opposing testimonies in relation to modes of treatment, some have been inclined to the conclusion, that medicine is of no avail, and that the sick had better be given up to the recuperative efforts of nature, the physician only so managing the diet and regimen as to favor these efforts. But, while the facts do not forbid such a conclusion, they by no means fairly lead to it. It is indeed a legitimate conclusion, that the cases treated under the opposing modes would have done better with no medication; that is, the gross

results would have been better. But the facts are far from proving that the absence of all medication would have been followed by better results than a judicious application of general principles, — the measures of both modes being adopted to some extent, and adjusted to the needs of individual cases. They do not touch this point at all. This must be decided by altogether different data.

It will not be deemed unprofitable here to consider briefly the question, whether positive medication is of real benefit in the treatment of disease generally. The question, let it be borne in mind, is, not whether the results of medical practice, as pursued by the profession at large, are better than they would be if disease were left to nature and a proper regimen ; but whether this is true of the ordinary practice of judicious physicians. That it is so, is proved by various kinds of evidence, which I will very briefly notice.

There is very decisive evidence on this point in the actual, undoubted effects of remedies. It is often difficult to distinguish between the favorable effects of medicines and the results of nature's efforts ; but there are cases in which there cannot be the slightest doubt as to the curative influence of the remedies that we employ. The evidence from such cases is clear on the simple question, whether medication is ever useful. To what extent it is applicable is quite another question, to be decided by other evidence.

We have evidence also from comparisons between cases subjected to medication and those which are left to nature. This evidence, however, is limited in amount ; because the belief in the propriety of using some positive means of treatment in disease is so universal, that such comparisons are very seldom made. One of the most conclusive which we have is that reported by M. Grisolle in relation to pneumonia. In 1840, he treated eleven patients attacked with this disease, without using any active remedies. The cases which he selected for observation were such, that there was no reason to fear a fatal termination in any of them ; and

yet they were sufficiently marked to test the question. The patients were kept quiet in bed, with a light diet ; and the only medicine given to any of them was some mild laxative to obviate constipation. The result was, that the prominent symptoms of the disease continued much longer than they did in other similar cases which were treated in the usual way. The pain in the side, in some of the cases, continued so long, that M. Grisolle felt called upon at length to use cupping and blistering for its removal. This experiment or observation does not, it is true, touch the question of rate of mortality directly : but it does indirectly ; for it is proper to infer, that remedies which relieve and shorten disease when it is mild, will tend to save from a fatal result when the disease is severe.

But we have some evidence furnished to us unwittingly by Homœopathy on quite an extended scale. I refer to the famous returns of the hospital of Fleischmann, near Vienna. These returns were offered to the public as decisive proofs of the superiority of the Homœopathic practice over the common practice of physicians. If the gross results alone had been given by Fleischmann, it would have added another to the many errors that have been palmed upon the world by bare statistics ; but, fortunately for the truth, though not so for his interest and for that of Homœopathy, he entered into particulars in relation to the number of cases of different forms of disease, so that we are enabled to make something like a fair comparison of the results with those of medical treatment in other hospitals. And such a comparison leads us inevitably to the conclusion, that the treatment of Fleischmann was much less successful than that which is followed in hospitals under the care of regular physicians. Now, as he is a true Homœopathist, and adheres to the infinitesimal doses of Hahnemann, we have here a comparison between the ordinary practice of hospitals and a practice which in reality leaves every thing to nature, regulating only the circumstances and the diet of the patients so as to favor nature's salutary operations.

I will notice these returns of Fleischmann very briefly, in order to show the grounds of this conclusion. His returns cover 6,501 cases treated in his hospital during a period of eight years. The mortality, which was 6.4 per cent, is claimed by him to be a small percentage of mortality in comparison with hospitals managed under the common practice. While this is true of some hospitals, it is not true of others. Some have a mortality considerably below that of Fleischmann's hospital. For example: Mr. Thomson states the mortality of the Dundee hospital to be 5.1 per cent; that of Aberdeen, 4.6 per cent; that of Inverness, 4.3 per cent; and that of thirty provincial hospitals, taken together, 4.4 per cent. The average mortality of the English military hospitals is only 2 per cent. Those hospitals which have a mortality above that of Fleischmann's are in the midst of large cities; for they are crowded with patients, and from this cause often reject applications for the admission of mild cases. But although Fleischmann's hospital was situated out of Vienna, in the suburbs, and was therefore not liable to be crowded with bad cases, his mortality is only a little less than that of the largest hospitals in London, as observed during four years; this being 8.4 per cent, while his was 6.4 per cent.

And this is not all. On examining Fleischmann's report in relation to the diseases of the inmates of his hospital, it is found that there is an uncommonly large number of cases of mild and curable diseases; while the number of cases of severe and incurable diseases is comparatively small. Dr. Simpson, from whose book on Homœopathy I glean these facts, has drawn a comparison in this respect between Fleischmann's hospital and the Edinburgh hospital, which in two years admitted nearly the same number of patients that Fleischmann's did in eight years. This comparison I will give as concisely as possible.

From an examination of a large number of hospital reports, Mr. Thomson, as quoted by Dr. Simpson, found that the percentage of mortality depends chiefly upon the number of

cases admitted of the following diseases: 1. Pulmonary consumption; 2. Organic disease of the heart; 3. Aneurism of the large vessels; 4. Organic disease of the kidneys; 5. Organic disease of the stomach. Of these five forms of disease, there were only 120 cases admitted into Fleischmann's hospital; while 548 were admitted into the hospital at Edinburgh. And, if other forms of disease which are apt to end fatally be taken into the account, the difference between the two hospitals will be seen to be still greater than this, as is represented in the following table:—

	No. of cases in Fleischmann's Hospital.	No. of cases in Edinburgh Hospital.
Consumption	98	276
Palsies	5	103
Organic disease of the heart . . .	15	159
Organic disease of the liver . . .	1	33
Bright's disease of the kidney . .	0	82
Diabetes Mellitus	0	17
Internal Aneurisms	1	18
Caries and Necrosis	5	57
Malignant (cancerous) tumors . .	0	55
Other tumors	0	36
	<hr/> 125	<hr/> 836

Besides all this, the difference between the two hospitals, in regard to cases of severe external injuries, is very great. In Fleischmann's hospital, there were only 52 cases of injury; and, of these, 34 were slight wounds, all of which recovered; and 18 were cases of burns, of which two died. But, in the Edinburgh hospital, there were 641 cases of injury; and 150 of them were subjects of the "principal operations," of which 32 died.

Again: all cases admitted when moribund are inserted in the reports of the Edinburgh hospital; while Fleischmann excludes them. This materially affects the percentage of mortality.

Dr. Simpson makes a comparison also between the two hospitals, in relation to mild and curable cases of disease,

thus : “ While, among the 6,000 Edinburgh-hospital cases, we have 34 cases of that non-fatal disease, inflamed sore-throat, or *cynanche tonsillaris*, among the 6,000 Vienna Homœopathic cases, there are no less than 301 cases of this affection. In the Edinburgh returns there are two cases, and in the Vienna returns 110 cases, of chicken-pox ; in Edinburgh one case of herpes or tetter, in Vienna 20 cases ; 48 cases of chlorosis and amenorrhœa at Edinburgh, and 90 at Vienna ; 37 cases of headache at Edinburgh, 61 at Vienna ; 52 cases of influenza at Vienna, and none at Edinburgh ; and so on.

So unusual a difference as this between these two hospitals, in regard to the character of their cases, is not to be referred merely to the fact that one was in the midst of a city, and the other was in the country. In Fleischmann’s hospital, there was undoubtedly much management in courting the admission of favorable cases, and in getting rid of those which were manifestly incurable ; and, with his large proportion of mild and curable cases thus obtained, the percentage of mortality is far from being in favor of his treatment. Assuming, as we have undoubtedly a right to do, that he gave his patients infinitesimal doses, we may say that this comparison between the two hospitals shows, most conclusively, that leaving disease entirely to nature is much less successful than a judicious positive medication. If this were not so, Fleischmann ought to have made out a much smaller percentage of mortality under all the favoring circumstances which have been mentioned. If any hospital under the control of “ regular medicine ” could be managed under similar circumstances, and with the same manœuvring in the admission, exclusion, and discharge of cases, vastly better results would be realized than those which Fleischmann has so vauntingly spread before the world. Our hospitals actually do much better than his did, even with much less favorable circumstances ; as, for example, the provincial hospitals, whose average mortality is 4.4 per cent ;

while that of Fleischmann's is 6.4 per cent, — about one-third more. The mortality of the English military hospitals is even less than that of the provincial hospitals, — only two per cent.¹

Having thus definitely settled the question, whether active medication is of any value, we come to another inquiry of a much more complex character; viz., Of how much value is it? or, in other words, What are the limits of its applicability? And another inquiry also is naturally coupled with this; viz., What are the principles which should guide us in fixing on the due limitations of positive medication in individual cases of disease?

These inquiries are not only complex, but difficult; and hence they are not fairly met by the great body of the profession. The rigid investigation which is requisite for this is unwelcome to those who are fond of the easy path of theoretical practice, or the easier one of routine; and the principles which should guide such an investigation have really been but imperfectly developed, and can for the most part only be gleaned here and there from the standard works of the profession.

I shall endeavor, in the following pages, to evolve from the experience of medical men answers to the inquiries which I have stated. For this purpose, I shall examine some of the

¹ Dr. Gairdner, as quoted by Dr. Simpson, remarks of Fleischmann's hospital, "If I were to give a formula for the management of a hospital designed to exhibit a low rate of mortality, it would be this: Choose your site well; let it be not *in* but *near* a large city, having already hospital accommodation on a prodigious scale, well known to the poorest classes of the community, and adapted to their wants; let the distance from the centre be such (say three miles) as will keep back the extremely abject and the dangerously diseased, either through want of knowledge of your institution, or want of power to reach it; let the arrangements be so perfect as to contrast favorably with the older hospitals, and to attract the valetudinarians, whose illnesses and means permit them to avail themselves of its superior accommodation; and, finally, let some special practice be pursued, in order to enlist the sympathies of rich or idle *dilettanti*, who will know how to fill your wards with the sort of cases suitable for your experiment. THIS IS PRECISELY THE PICTURE OF THE VIENNA HOMŒOPATHIC HOSPITAL, which has the amazing effrontery to call on us to compare its peddling *experiments* with the great labors of pure beneficence, of which general hospitals of this and other countries furnish examples."

changes that have been made in medical practice during the last twenty-five or thirty years, and, from the limitations and modifications already made in therapeutics, deduce those principles which will enable us to make still farther limitations and modifications. I do this with the firm belief, that, by such an investigation, as before hinted, we shall come at the principles on which therapeutics may be made much more definite than it now is, and practical medicine be relieved of much of the uncertainty with which it is supposed to be unavoidably enveloped.

I have said that the reign of active medication was at its height in the first quarter of this century ; but it was by no means an undisputed reign. Many physicians then pursued a less active treatment than the mass of the profession, and some publicly protested against the dominant error. For example : Dr. Falconer, of Bath, as early as 1809, in a paper in the first volume of the Transactions of the Medical Society of London, in strong language pointed out the dangerous effects of the prevalent indiscriminate use of mercury. But Dr. Hamilton says, about ten years after, that his warning voice was not regarded, and that “the employment of mercurial medicines has for several years become more and more extensive.”

So, on the other hand, when the reign of active medication really began to decline, there was much opposition to the movement in the profession. Hence it is that Dr. Bigelow, in his valuable paper on Self-limited Diseases, read before the Massachusetts Medical Society in 1835, makes use of such language as this : “In many places, at the present day, a charm is popularly attached to what is called an active, bold, or heroic practice ; and a corresponding reproach awaits the opposite course, which is cautious, palliative, and expectant.” But multitudes of observers had adopted more or less the same views that Dr. Bigelow developed so clearly in his paper ; and the decline of positive medication became more and more general in the profession. The changes which

have taken place in this movement I propose now to notice, first in relation to certain remedies, and then in relation to diseases.

The change which has been made in the use of mercury, during the past twenty-five or thirty years, presents many points of interest. Its use for some purposes has been entirely discontinued. It was quite largely used for some length of time in fever, with the idea, that, if the constitution could be brought under its influence, the fever would be removed; a mercurial fever, as it might be called, taking its place, which the recuperative powers of nature could easily remove. Although in some cases this mode of practice seemed to produce the effect intended, it was found, on the whole, so frequently to fail, and to be attended sometimes with such disastrous results, that it has been wholly abandoned. Mercury is used, at the present time, very sparingly in fever, and only so far as it is needed to affect the secretions, or to combat accompanying inflammation.

Mercury is also discontinued from use in the exanthematous diseases, unless there be some special reasons in the complications of these diseases for its employment. At one time, its use was highly lauded by Dr. Armstrong and others as a remedy in scarlatina; but, at the present time, there is no truth more definitely settled by the experience of the profession, than the impropriety of its use as a common remedy in this malady.

Mercury is no longer used as a common cathartic. It has come to be the settled practice of the profession to avoid its use, in this respect, in all cases where the distinctive effects of this drug are not called for. This is in strong contrast with the incautious and indiscriminate use of this remedy which was so prevalent, both in and out of the profession, during the first quarter of this century.

The same discriminating experience which has discarded mercury as a general remedy in fever and in the exanthemata has retained it in the treatment of inflammations; but it

has been found that it need not be pushed to the extent that was formerly supposed to be necessary in this class of diseases. In most cases, it is not necessary even to affect the gums; and salivation is always to be avoided; although, in some severe cases, it is proper to run the risk of producing it.¹

The combination of calomel, antimony, and opium, which, in various proportions, is now so much used, is a remedy of very great value in the treatment of inflammatory diseases. To Dr. Robert² Hamilton, of Lynn Regis, England, the credit is commonly given of first drawing the attention of the profession, in the year 1783, to the efficacy of this combination. He says that its usefulness was first suggested to him in following out a hint given to him by an army surgeon, in relation to the use of calomel in the treatment of acute hepatitis. He added opium to the calomel to relieve the pain attendant upon inflammation, and then antimony to relieve the febrile excitement and to produce perspiration; and, inferring that this combination might be serviceable in the treatment of the inflammation of other organs as well as

¹ A valuable paper has been published recently by Dr. Henry W. Williams, of Boston, showing that iritis can be treated successfully without the use of mercury and active antiphlogistic measures. If his results shall be verified by others (and I see not why they should not be), Dr. Williams will produce as great a change in the practice of the profession in this disease as Dr. Ware has in its practice in delirium tremens. Farther investigations are needed, not so much to confirm the main point in his paper, as to determine how much the different remedies which he used had to do with effecting the cure. I apprehend that it will be found that the opium given internally, and the belladonna used locally, were the effective remedies; while the quinine and the iodide of potassium are of small account. It is to be regretted that Dr. Williams was not more particular in reporting the amounts of opium that were taken by the different patients.

² Too much has been claimed for Dr. Hamilton, by his countrymen, in attributing to him the first introduction of calomel in the treatment of inflammatory maladies. To an American physician — Dr. Douglass, of Boston — belongs the credit of this. He introduced it as early as 1736; and, by the middle of the century, it was quite the common practice among American physicians in pneumonia, pleurisy, rheumatism, &c. Dr. Hamilton's observations were made many years after this; and to him belongs the credit of adding, to what had been established by Douglass and the American physicians generally, what he discovered in regard to the combination of other important remedies with the calomel, as stated in the text.

that of the liver, he proceeded to verify the inference, and thus inaugurated a practice which has become established by abundant experience as one of the permanent advances of the profession in the treatment of a very wide range of diseases.

Mercury is a remedy of great value in the treatment of many chronic diseases ; but, during the reign of active medication, it was used in them too largely, and often with so little discrimination, that disastrous results were produced. Not only is it now used much more cautiously in these maladies, but, in very many cases in which it would formerly have been deemed applicable, it is now given up, as calculated only to add to the sufferings of the patient, without effecting any good result, or to leave him in a bad condition after the cure of the particular disease for which it is used is accomplished, or even to prevent a cure which might have been effected if more gentle means had been employed. In Dr. James Hamilton's book on the "Use and Abuse of Mercurial Medicines," there are many interesting facts stated bearing upon these points.

Emphatically may it be said, in view of the sad results which have come from the needless use of mercury, that the great diminution of its use in the treatment of disease is "an advance in favor of humanity and scientific medicine." At the same time, it is to be borne in mind, that it is far from being a mere general diminution. It is a diminution which is based upon an extensive range of discriminations ; so that, while in some cases where it was formerly used it is now wholly discarded, and in others it is used with much less freedom, there are some cases in which its introduction into the system is effected as rapidly as possible ; and cases occasionally occur in which there is some reason to think that it is proper to use it in exceedingly large doses. This last point, however, is as yet *sub judice*.

Some of the most valuable acquisitions which the profession has made in therapeutics during the present century are

the discriminating limitations that it has been able to put upon the use of this remedy, which is one of the most efficient of its active means of cure. The advance which has been effected in this respect step by step in the profession's experience is greater than is ordinarily supposed. Larger additions have in this way been made to our real means of cure than by any, or even perhaps all, of the new remedies that have been discovered during the same period of time.

All disturbing remedies are much less in vogue now than they were in the first quarter of this century. Physicians then very commonly used such remedies, especially in the beginning of attacks of disease, for the purpose of breaking up the attack, or of lessening its force. Emetics were common remedies for this object. The practice was applicable in some cases ; but it was far too generally employed. So common was the plan of thus adding to the turmoil of disease at the outset, that it was a popular saying, that it was necessary to make one worse in order to make him better. And this disturbing and depressing mode of treatment was by no means confined to the beginning of disease ; but it was customary to continue it to some degree during the progress of the case. Febrile symptoms, so long as they lasted, were combated actively ; and active remedies were always addressed to the removal of any local derangements that might exist, little dependence being placed upon the recuperative efforts of nature. But now the general character of medical practice is vastly different in the points alluded to. In comparatively few cases, even of acute disease, is the patient made worse at the beginning, in order to make him better. Generally he is made better at once, by measures that relieve the disturbance of disease, instead of adding to it ; and, during the progress of the case, great caution is exercised in the use of any remedies that may interfere with the rest and quiet so essential to the free operation of the recuperative powers, or that may so depress them that they

cannot act with sufficient energy to effect a recovery. The truth that the irritation of disease is often the great source of the exhaustion attending it, and that the physician should therefore be careful not to add to it by his remedies, is now quite fully appreciated. Commonly, it is true, some disturbing treatment is required occasionally during the progress of a case; but it is managed with caution, and generally quieting remedies are used in combination, so as to render the disturbance as slight as possible.

The change of which I have been speaking has done for medicine what the introduction of the art of healing by the first intention has done for surgery. The irritation of the disturbing modes of treatment so prevalent during the reign of active medication had the same effect upon internal maladies that the irritating ointments had upon the wounds into which they were inserted so universally by surgeons before the time of Ambrose Paré; and the improvement in both cases consists in a return to the simplicity of nature.

Perhaps there is no remedy in the use of which there has been so much change as bleeding. It was during the first quarter of this century, and even for some years farther on, a common remedy in all febrile and inflammatory diseases. I have already alluded to the views of Dr. Gallup in regard to this remedy. Although there were few in this country whose views were as extreme as his were, bleeding was everywhere a favorite remedy with the profession. In England, Armstrong and Southwood Smith were the prominent advocates of bleeding. The strong views of the latter — so earnestly, skilfully, and I may say beautifully, developed in his book on fever — were very captivating to all enthusiastic minds; and his book had for a time a wide influence, both in England and in this country.

Bleeding was popular with the people as well as with the profession. In almost all cases of accident, it was practised as a matter of course. In pregnancy, it was resorted to as

the established remedy for various inconveniences and complaints, that we now find are easily removed by less formidable means, or that commonly had better be borne than be removed, if bleeding be the only thing that can remove them. It was the custom also with many to be bled occasionally, in order to guard against attacks of disease to which they supposed themselves liable. This was practised especially in the spring.

This very common resort to bleeding, both as a remedy and as a preventive, is now abandoned. This remedy has, with others, been subjected to discriminating limitations; perhaps, from the influence in part of popular prejudice, it has been in some quarters too much given up, especially local bleeding. Whenever inflammation exists in an important organ in any marked degree of severity, this remedy is applicable, — general bleeding when there is sufficient constitutional affection to call for it, and the system is in a condition to bear the loss of blood; and local bleeding when the circumstances of the case do not warrant general bleeding.

Bleeding, it is to be remembered, is a remedy that is calculated to allay the irritation of disease; and it never adds to it when it is really applicable, and is not made use of to an improper extent. It is therefore, in some cases, really not as objectionable as certain remedies that are substituted for it in order to avoid exhaustion. It is often better to reduce febrile excitement or inflammation by this quiet remedy than to do it with remedies that may exhaust the vital energies by a series of impressions which are depressing, and at the same time irritating. I am persuaded that there is often too little fear of this result from such impressions on the part of those who have great fear that bleeding would produce it. Remedies of the kind alluded to, when pushed too far, may cause an exhaustion as irremediable as that which is produced by an inappropriate bleeding.

Having thus noticed the change in practice in relation to

the use of certain remedies, I pass to consider the changes which have taken place at the same time in the modes of treatment in some diseases.

I have already alluded to fever in speaking of remedies ; but the change has been so great in the management of this disease, that it deserves something more than a passing notice. An active interference, by means of bleeding, mercury, purgatives, emetics, antimonials, &c., was at one time the general practice ; it being supposed that such remedies could shorten, or even arrest, the disease. There were few that suspected that the prostration which was so apt to ensue in the progress of the fever was in part the result of the medicines used in the beginning. But a great change has taken place in the treatment of fever. Active measures are, for the most part, abandoned. Quieting measures predominate ; and great caution is exercised in avoiding any thing which may exhaust the strength by irritation or by direct depression. If the fever be uncomplicated, the treatment is simple ; and generally it is its complications only that are attacked with active remedies ; and this is done cautiously.

This change is the result of several concurring causes. First, the consideration of the character of the disease contributed to this result. So long as it was supposed that fever was a disease that could be broken up, or be materially shortened, by active treatment, this treatment continued in vogue ; but, with the alteration of the views of the profession in regard to the character of the disease, the treatment became less active. And most medical men now feel, in regard to active treatment, as Dr. Pitcairn did, who said, when he was asked his opinion of some treatise on fever, “I dislike fever-curers. A fever can be guided : it cannot be cured.”

A close observation of the effects of remedies contributed to this result. Thus, as quoted by Dr. Hale in his investigation of the typhoid fever of New England, Dr. Bright said in 1827, that he had “almost always found that the

small doses of antimonial remedies usually administered, as a part of the diaphoretic plan, do harm where any decided tendency to irritation of the bowels exists." Similar observations were made by others, both in relation to this and other irritating remedies.

But, thirdly, after a time, pathology brought in its investigations to confirm the observations made by Bright and others, in regard to the unfavorable effect of some of the active remedies. Among the pathological appearances found the most common is inflammation of Peyer's glands. This inflammation must, of course, go through a certain process, before a recovery can be effected. It is not an inflammation of a rapid character; and so time must be given for the recovery. We should be exceedingly careful not to aggravate the inflammation by our treatment; and, although nothing very direct and decided can be done to lessen it, we may so alleviate the general irritability, and that of the intestinal canal, as to make the inflammation go through its course with ease, without coming to ulceration, or to insure a successful termination to it even when it is severe enough to reach this result.

The practice of Broussais, although it was based upon a false theory, did essential service in bringing about this change in the treatment of fever. The results of the displacing of irritating remedies by his leeches and gum-water showed very clearly that such remedies were not required, — at least, as the ordinary means of treating the disease.

A change very similar to that which has occurred in the treatment of continued fever has occurred also in the treatment of the exanthematous diseases. This is especially true of scarlatina. Such remedies as bleeding, calomel, antimonials, purgatives, &c., so common in the treatment of this disease in the first part of the past fifty years, are now used but sparingly, and with much caution. During the period of active medication, various modes of treatment were lauded by their advocates, each mode having some prominent reme-

dy, accompanied by some lighter remedies as auxiliaries. Thus Dr. Fothergill used chiefly stimulants ; Dr. Southwood Smith, bleeding ; Dr. Armstrong, calomel ; Dr. Currie, the affusion of cold water.

The mortality from this malady would undoubtedly have been less, if it had been left wholly to nature's recuperative efforts, instead of being subjected to such active and exclusive modes of treatment. And yet all the remedies of these modes are applicable to some limited extent ; and the true practice is to use, for the most part, negative measures, and remedies that quiet irritation, with the occasional employment of the active remedies alluded to, when the circumstances of the case call for them by indications that are clear and decisive. And this is the view of the treatment of this disease which is now adopted by the great majority of the profession.

This malady belongs to that class to which Dr. Bigelow gave the name of self-limited diseases, which he thus defines : "By a self-limited disease, I would be understood to express one which receives limits from its own nature, and not from foreign influences ; one which, after it has obtained foothold in the system, cannot, in the present state of our knowledge, be eradicated or abridged by art, but to which there is due a certain succession of processes, to be completed in a certain time ; which time and processes may vary with the constitution and condition of the patient, and may tend to death or to recovery, but are not known to be shortened or greatly changed by medical treatment."

This definition applies more strictly to some diseases of this class than to others ; or, in other words, the limits differ in definiteness in the different diseases which may properly be said to belong to this class. Thus small-pox and measles are very definite in the period which each occupies in its processes ; scarlatina is rather less so ; and continued fever still less. Dr. Watson considers the latter to occupy gene-

rally about three weeks :¹ but sometimes it is shorter, and often is much longer than this ; and, when it is prolonged, it appears generally to be a continuation of the same disease essentially, and is not, as is the case with scarlatina when prolonged, merely a prolongation of results rather than of the disease itself. It is upon the circumstances that govern these continuations that medication can sometimes exert a decided influence ; and the more so, the less definite is the natural period of the disease.

The progress which the profession has made in the therapeutics of this class of diseases is much greater than is commonly supposed. Physicians are hardly aware of the position of most of the profession some twenty-five years ago, in regard to their nature and treatment. It was such that Dr. Bigelow, in his discourse on self-limited diseases in 1835, seemed to have some distrust as to the reception his ideas would meet with. His language was therefore cautious. He spoke of the object of his discourse as being “to endeavor to show the existence of such a class of diseases ;” and he says, “In proceeding to enumerate more precisely some of the diseases which appear to me to be self-limited in their character, I approach the subject with diffidence. I am aware that the works of medical writers, and especially of medical compilers, teem with remedies and modes of treatment for all diseases ; and that, in the morbid affections of which we speak, remedies are often urged with zeal and confidence, even though sometimes of an opposite character.”

Although there were many at that time holding more or less the same views with Dr. Bigelow, yet it was quite common among medical men to speak of his discourse as showing that he was unduly sceptical in relation to the powers of medicine. But, at the present time, these views are those of the profession generally ; and, in carrying

¹ As the distinction of continued fever into typhus and typhoid fevers is still a subject of dispute, I have everywhere in this Essay spoken of it as one thing.

them out in the treatment of disease, a very great advance has been achieved in the discriminating limitations which have been placed upon the use of remedies in this class of maladies.

In that most common of all chronic diseases, phthisis, the change in treatment, since the reign of active medication has passed away, has been of the most decided character. Bleeding, emetics, antimonials in small doses, digitalis, &c., were quite common remedies in the treatment of this malady in the first quarter of this century. Although, as long ago as 1789, Dr. Thomas Percival developed the true pathology of phthisis, taking the ground that "inflammation is perhaps only an occasional concomitant" of the formation and softening of tubercles, yet the general practice in this disease continued long after that to be founded upon the idea that there was inflammation, or at least congestion, to be combated from the very outset. But now this active mode of treatment is abandoned. It is a general conviction in the profession, that little comparatively is to be done by medication; and most of the remedies that are used are such as are calculated either to give tone to the system, or to quiet irritation. But perhaps, in avoiding the errors of our predecessors, we have gone too far. Inflammation is, I am persuaded, too much ignored at the present day as a concomitant of the essential pathological process in this disease; and local bleeding and counter-irritation are too seldom employed. There is danger of our having an exclusive mode of practice in this respect, and thus lessening that "advance in favor of humanity and scientific medicine," which has certainly been secured in the marked abandonment of drugs in the treatment of this malady.

Perhaps there is no disease in which there has been so thorough an abandonment of active medication as in delirium tremens. For a long time, the doctrine of the profession was that promulgated by Dr. Sutton, — that the patient must sleep or die; and that the grand means of securing sleep

was opium, which was supposed to be ordinarily needed in large doses. The profession were right in regard to the first clause of this doctrine. The excessive agitation of the nervous system would, of course, wear out the patient, unless it could be brought to an end, and the patient could sleep. But they were wrong in regard to the necessity of opium to produce this result. The agitation can be quieted by other means, as alcohol, for example ; and even negative measures will often answer the purpose, — the disease coming to an end from the mere withdrawal, as far as is possible, of all excitement of body and mind. To Dr. Ware, of Boston, belongs the honor of having first distinctly announced the truth on this subject, which he did nearly thirty years ago. Following up his observations, he became satisfied even that the sleep in which the disease terminated was much oftener a spontaneous termination than the result of the operation of opium.

Since the investigations of Dr. Ware, various plans of treatment have been adopted. Dr. Klapp, of Philadelphia, relied almost entirely upon emetics. He states, that, of 51 cases, opium and alcohol were used in only one case ; and that only one death occurred, which was caused by epilepsy. The alcoholic treatment, of which Dr. Gerhard, of Philadelphia, is a prominent advocate, is represented as equally successful. He reports, that, of 162 cases treated in one year in the Philadelphia hospital, only one died ; and he had been treated with opium previous to his admission, and died when he had been in the hospital but a few hours. Dr. Dunglison reports similar success in the treatment of 84 cases in the Women's Lunatic Asylum ; the treatment being "entirely eclectic, and in many cases expectant." Opiates and stimulants were given in but few of the cases. Emetics were used in some cases. The patients were shut up in a darkened room, and kept quiet ; easily digested food was prescribed, when the stomach would retain it ; and the bowels were kept open by gentle cathartics. This consti-

tuted the treatment. Of the 84 cases, all recovered but one. In this case, the patient had been treated for a week before admission, and was not seen at all by Dr. Dunglison.

Although these statistics are not extensive enough to settle many points in regard to treatment, there are some few points which they do settle very clearly. First, that opium, so far from being a *sine quâ non* in the treatment of this disease, is not ordinarily essential to effecting a cure. Second, that the recuperative power of nature is the chief agent of cure. Thirdly, that the disease is almost always recovered from, if it have no other disease complicated with it. Fourthly, that there is no one plan or mode of cure which is exclusively applicable.

There are some things which these statistics do not prove, some of which it is well to notice. They do not prove that opium is an improper remedy; neither do they show that any of the other means, which have been made the prominent measures of the several modes of treatment, are inapplicable; neither do they indicate the relative value of these different means, or the circumstances which should govern us in their application. Mere statistics alone cannot settle such points; they must be settled by minute and careful observation of cases; and general statistics can only be auxiliary to such observation in doing it. It is this observation, that, under the guidance of established general principles, is determining, in the experience of multitudes of careful and scrutinizing practitioners, the relative value of the different remedies; and, so far as we can get at the verdict of this observation at present, among the positive means of cure, opium in moderate doses is the most important. If there could be an accurate comparison made between the results of the present discriminating practice in this disease, and the heroic opium practice of former days, it would undoubtedly show that the approach which has here been made "towards the rational and successful management of disease, without the necessity of drugs, is an advance in favor of humanity and scientific medicine."

There are some diseases in regard to which there is still a struggle going on in the profession in relation to modes of treatment, similar to that which so long prevailed in regard to some of the diseases which I have noticed. Such are yellow fever and cholera. There are the same discrepant testimonies in regard to the modes of treatment in these, as there have always been about exclusive modes in other maladies; and probably the result which has commonly been reached will be reached here. The profession will soon come to the belief, that medicine has less power over these diseases than has been supposed; that no one mode of treatment is universally applicable; that nature is to be trusted quite largely; and that the curative means must be employed in obedience to general principles, instead of narrow theoretical notions.

The movement towards such a result is very strong, of late, in regard to yellow fever. Bleeding, stimulants, quinine, calomel, the tincture of muriate of iron, &c., have each had their warm advocates; but active medication of these various kinds is beginning to be given up. Thus Dr. Fenner, of New Orleans, in his report on the epidemics of Louisiana, in the "National Transactions" of this year, says, "In respect to treatment, I feel authorized to say, that the general opinion of the profession in this region now is, that we have hitherto been giving too much medicine in yellow fever; in other words, we have been taking it out of the hands of nature, and trying too hard to *cure* it: whereas all that seems necessary to be done is to assist nature in her conflict with the febrific cause." So also Dr. Cain, of Charleston, says of the profession of that city, that they have "generally settled down upon the opinion long since promulgated by Pitcairn respecting common continued fever (typhus and typhoid); viz., that yellow fever cannot be *cured*, but *may be conducted* to a favorable termination."

There are some diseases, the treatment of which is as active now as it ever was. Such, for example, are colic and

intermittent fever. In the latter disease, quinine is often given much more freely than it formerly was ; and by many with little regard to those circumstances which, it has been thought, should limit its use, and in some cases altogether forbid it. But the limitations, which the varying circumstances of the different cases should place upon the administration of this effective remedy, are not yet ascertained with sufficient definiteness ; and much is undoubtedly to be yet learned in regard to its use by careful and extended observation.

In the inflammations, active medication is much employed at the present time, but less boldly than formerly, and with more discrimination in regard to the applicability of the various means in different degrees to different cases. When inflammation occurs in connection with other diseases, as fevers and the exanthemata, it cannot be attacked with active remedies as freely as when it occurs alone. Especially is this so when the inflammation forms a part of an epidemic disease. Good examples of this are found in yellow fever and dysentery. When dysentery is sporadic, — that is, when it is an inflammation simply, with the accompanying fever for the most part symptomatic, — it is much more amenable to remedies than when it is an epidemic dysenteric fever ; the inflammation in this latter case bearing to the existing fever the same relation that the inflammation in yellow fever does. In both diseases, the inflammation and the fever are results together of the cause or causes producing the disease.

This leads me to remark, that, commonly, active medication is much less admissible in those acute diseases which depend in part upon some occult cause, than in those which result from causes, the operation of which we to some extent understand. If this fact had been more recognized by the profession, we should not have had such bold and various treatment, with all its discrepant testimony, in the epidemics that have from time to time appeared ; and their ravages would not have been so extensive and severe.

I have thus portrayed to some extent the change which has taken place in medical practice during the past twenty-five or thirty years. Just how far this change has been a real "advance in favor of humanity and scientific medicine," it is impossible to estimate; but that the advance has been a great one is very evident. The deliverance from the suffering that formerly came from fruitless medication is of itself no small gain. The amount of life saved would be seen to be very great if we could obtain correct statistics on this point. But, besides this, there is great gain in many cases in the actual shortening of the term of sickness, and in the more clear convalescence which is established; for an indiscriminating active medication is apt to make long and bad cases of mild attacks of disease, and to leave patients, on recovery, with a shattered system and morbid tendencies, ready to be lighted up into active disease on the application of any exciting cause.

We sometimes have the opportunity of seeing the bad effects of indiscriminating active medication exhibited in the most palpable manner. Not only does quackery furnish us with such opportunities, but we meet with them occasionally within the bounds of the profession. I will give but a single example. There was at one time much noise made in various parts of New England about a disease which was called typhus syncopalis. That such a disease did exist, I will not deny: but, at the same time, we have the most abundant and reliable evidence to show, that much of what was called by this name was the product of the remedies administered for its relief; in other words, that it was often in fact a brandy and opium disease. I will not detail the evidence, but simply state it in the general. 1. In many cases, the discontinuance of the remedies effected a solution of the symptoms. 2. A simple and mild treatment relieved in a very short time cases which had the same symptoms with those which, under the brandy and opium treatment, became severe and protracted cases. 3. In some instances,

all the cases of the so-called typhus syncopalis occurred only in the practice of those who pursued this mode of treatment, instead of being distributed among the different physicians in the same locality. The evidence on the two first points is abundant and various; and the whole proves beyond a question, that a continued use of stimulants and opiates can, under certain circumstances, produce a morbid condition resembling that which has been described as sinking typhus.

As then we see, in this and in some other cases, an inappropriate positive medication almost entirely creating the disease which it is supposed to cure, we can have some conception of the extent of its varied influence in different diseases, more or less modifying and aggravating them. And the fact that it is not more palpably destructive of life is owing to the influence of the recuperative powers of nature, which are ever ready to do their work, and commonly do it very effectually as soon as art's busy meddling with her operations is given over.

In dismissing this topic, I remark, that Homœopathy has derived much of its popularity with the people from the manifestly bad results of rival modes of active medication; and that undoubtedly many of those practitioners of this form of quackery, who were once in the ranks of our profession, are really less unsuccessful than when they practised what is called regular medicine, because now they leave to nature what they once undertook to do by their bungling over-medication.

I propose now, in pursuance of the plan of this Essay, to enter somewhat upon a comparative estimate of the value of the different kinds of curative means, which have been so variously brought into view in commenting upon the changes that have taken place in medical practice. This is necessary as preparatory to the development of those principles which should guide us in the use of these means.

The most important of all these means is the recuperative

power of nature. All our means of art have little influence in comparison with this. Well is it said by Sir Gilbert Blane, that "the benefit derivable to mankind at large from artificial remedies is so limited, that, if a spontaneous principle of restoration had not existed, the human species would long ago have been extinct."

But why do we call this recuperative power *our* means of cure? Because we can use it. We can modify and direct its efforts; we can remove obstacles out of the way of its action; we can put the system into a condition to receive the full benefit of its efforts. A large part of the physician's duty is thus to be waiting upon nature; and, even when he uses active measures, they must commonly coincide with her efforts, or they will do harm. It is seldom that he is called upon to go counter to her operations, and then only temporarily.

This is *our* means of cure much in the same sense that the wind is the sailor's means of bringing his ship safely into harbor. With his appliances, he so adjusts his vessel that this natural power shall effect the purpose, as the physician adjusts the circumstances of his patient so as to let the natural powers in his system carry him safely into convalescence. The comparison might be followed out, without bordering in the least upon the fanciful, in other particulars; but they are so obvious that it need not be done.

Next in importance in the treatment of disease is the class of quieting and comforting means and measures. Disease is ordinarily accompanied by turmoil and suffering. These it is important to allay, in order that the recuperative power may act easily and effectually. The means of doing this are widely various. Some of them are negative in their character. Rest, which is often so manifestly necessary in the practice of the surgeon, is as necessary in the practice of medicine. There is quite a common failure among practitioners on this point. The neglect of it often counteracts in part, sometimes wholly, the curative influence of remedies.

Many a patient dies because the physician has not given him rest. Especially is this true of mental rest ; and, when such neglect occurs, the dereliction of duty is no less than if the physician had carelessly allowed the patient to take a poison that killed him. He has, in fact, allowed him to take a poison ; and, though it be a mental one, it has proved as fatal as if it were a poison introduced into the stomach.

There are various drugs which are used for the purpose of securing rest, and relief from suffering. Opium is not only at the head of this class, but it is *the most important of all drugs that are employed in the treatment of disease*. It helps the physician in giving his patient that rest which is so effectual a means of cure. Its direct influence upon disease constitutes but a small portion of its usefulness. It is in its indirect influence that it has so wide and varied a curative agency. By its relief of pain, and its calming of disturbance, it saves from the exhaustion and aggravation of disease, that are so certain to result from continued irritation ; and enables the recuperative energies to do their work quietly and effectually. It also, conjoined with other remedies, makes them act kindly, when they otherwise would occasion so much irritation that they would do harm rather than good. In these ways, this remedy is constantly of use in the treatment of disease. It exerts ordinarily so quiet and gentle a ministration, that we are apt not to be aware of the great amount of influence that comes from it.

In the reign of active medication, it was common to speak slightly of palliative remedies, in distinction from those which were supposed to be radical in their influence upon disease. It was not only the popular notion, but it was to some extent the belief of the profession, that opium never cures. In those cases where such active remedies as bleeding, mercurials, &c., were used, these were supposed to effect the cure, while opiates merely relieved the pain and restlessness. The fact that in doing this they had much to do with the cure was but imperfectly recognized. Much less was it

seen, that, in many cases, nearly all that the physician can do is to allay disturbance and relieve pain by opiates and other means, in order that nature may carry on her curative operations quietly and effectually. And here I cannot forbear to remark, that opium is of much more value than many suppose in quieting the irritation of commencing disease. Its use is too often deferred till certain impressions, deemed to be a necessary preparation of the system for the action of this remedy, are made upon it. It is indeed true, that opium may be so used as to cover up merely the smouldering fire of disease ; but this is only when other means, which should be used at the same time, are neglected.

There is no truth better established than that whatever palliates has, in doing this, a tendency to cure ; and, taking into view the whole range of disease, quieting and comforting influences have more to do with effecting recovery than those which are disturbing. Even the remedies which for the moment disturb, often do more towards the cure, by the relief which they at length afford to disturbance or suffering, than by any direct effect which they have upon diseased action. This may be said of all remedies that remove sources of irritation. And the lighter means of contributing to the relief of the turmoil and distress of sickness are not to be neglected. Refreshing influences acting upon the morbid sensibilities, genial mental influences, even so small things as the smoothing of a pillow, often contribute much to the recovery, and are sometimes essential to it.

I will not go further in the classification of our means of cure according to their relative importance. It is sufficient for my purpose to show that nature's salutary efforts, and the quieting means which have so much influence in favoring these efforts, stand in importance far above all remedies of a disturbing character.

Before, however, dismissing this subject, I will remark briefly upon the prominence which should be given to simple means in the treatment of disease. The judicious application

of these is often neglected, while the physician is busied with the administration of remedies, the operation of which is perhaps involved in obscurity. The most successful practitioners are those who take the simplest views of diseases and their remedies ; practising according to the dictates of a good common sense, taking that term in its highest meaning. On the other hand, those who are captivated with recondite views of the *modus operandi* of medicines are unsuccessful practitioners. A young physician once asked an old practitioner,¹ who had acquired by his practical good sense a wide reputation, not merely with the public, but with all the profession in his neighborhood, what his principles of practice were ; expecting to hear from him some very profound remarks on the subject. But the sagacious old man replied, "My principles are very simple. If the patient is hot, I cool him ; if he is cold, I warm him ; if there is pain or restlessness, I relieve it ; if there are irritating matters, I evacuate them ; if any secretion is scanty, I try to make it free. These are some of my most important principles."²

To such a physician, the more simple the means of cure, the better. Cold water, which can be used so extensively and so variously, is to him often a remedy of greater value than any drug that can be administered.³ He makes

¹ The late Dr. Amos Twitchel, of Keene, N.H. This eminent physician used to relate often an anecdote of himself, and his preceptor, Dr. Nathan Smith, which is very instructive as to the caution necessary in drawing inferences from single cases in regard to the efficacy of remedies. "In the earlier part of my practice," said Dr. Twitchel, "I made use of a certain preparation of silver, and wrote to Dr. Smith, saying, 'I can cure epilepsy; at least, I have done it.' Dr. Smith wrote in reply, 'Do it again.' But," added Dr. Twitchel, "I never have done it again to this day."

² The grand improvement which Sydenham introduced in the treatment of small-pox consisted simply in the application of plain principles of common sense. And I know of no fact which shows more strikingly the prevalent disposition to overlook these, and to grasp at something beyond them, than the slowness with which his principles of treatment in this malady obtained a foothold in the profession.

³ Neither the efficacy of this remedy, nor the variety of modes in which it can be applied, is appreciated generally by the profession; and from want of caution, and a disregard of the simple principles which should regulate its application, it is very often used injuriously, especially when its application is left to attendants with vague and unintelligible directions, as is too often the case.

much account of such matters as friction, external applications of various kinds, the regulation of the temperature of the room, of the amount of clothing, ventilation, cleanliness, &c. He attends also to the mental influences that are brought to bear upon the patient. He does not consider himself the mere doser of the body ; but he regulates the mental doses, so to speak, that are administered, sometimes considering these of more importance than the drugs that he gives. He feels bound to take charge of every thing that can in any way affect the case, and is satisfied with nothing short of absolute control of the sick-room.

I pass now to the development of certain principles, by the guidance of which, in the use of curative means, we may secure the advance that is contemplated in the proposition which is the subject of this Essay.

It is a grand axiom of Chomel, that it is the second law of therapeutics *to do good* ; its first being this, — *not to do harm*. This axiom, however, does not go far enough. It would be better if there were added to it the words, *and to prevent harm from being done*. An active interference is demanded of the physician to shut out all injurious influences. His duty in this respect, as I have before said, is as positive as in the administration of remedies.

But I will go more into particulars. I lay it down as a rule, fairly deducible from the views which I have presented in relation to therapeutics, that *no active medicine should be used in any case, unless the evidence is clear that it will effect good*. This is in entire opposition to the old axiom, *Melius anceps remedium quam nullum*, — an axiom which, though time-honored, has been largely destructive of life, and has hindered greatly the progress of therapeutical science. This axiom would indeed be applicable if disease were cured only, or even chiefly, by medicine ; but, as the recuperative power is the chief agent of cure, there is in the use of all doubtful means great hazard of interfering with its salutary efforts.

Substantially, this rule has been adopted by sagacious men in other matters than medicine. After Lord Chatham had, upon some occasion, criticized the doings of the ministry, it being said in their defence that the error charged upon them arose from a want of information, he said, in reply, that it had ever been the rule of his life, whenever he did not know what to do next, to do nothing. Especially applicable is such a rule in medicine: for besides the fact, that in the strife of disease there are many and complicated agencies at work, some of which may be unknown (making, therefore, a throw at a venture peculiarly hazardous), there is one powerful agency — the recuperative power — always working for good; with which it is exceedingly important that the physician should not interfere, and to which he had better intrust the welfare of his patient, than employ expedients of a doubtful character.

But are there no exceptions to this rule? There are some; but they are few. Some diseases furnish exceptions: they are diseases in which, thus far, there has been no cure in nature, nor any found by art. Hydrophobia is an example. Here there is properly room for experiment with remedies.

So, too, there are occasionally cases of disease that is ordinarily curable, in which it is manifest that the patient must die, unless some active interference of art can save him. Here a doubtful remedy, from which there is some reason to hope, is admissible: but, to warrant its use, the case must be a clear one in regard to the prospect of a fatal termination; and it must be remembered, that cases which seem to us to have a fatal tendency, almost beyond a doubt, sometimes recover from causes that we do not understand. And I may remark in this connection, that the capabilities of nature are often not sufficiently appreciated in severe disease, as such cases show us. Cases in which such unexpected recoveries occur are for the most part rather indefinite in their character. They are cases in which a physician that always wishes to have clear reasons for what he does is in

doubt what to do ; that is, so far as any remedy that will act with any directness or efficiency upon the disease is concerned ; and so, in obedience to Lord Chatham's maxim, he does nothing. He watches the movements of the case, counteracting, so far as he can, the tendency to death ; sustains the exhausted powers ; quiets irritation ; and awaits the result. A busy interference in such a case would frustrate the salutary efforts of nature ; unless, as a mere matter of chance, the physician should strike upon a plan that coincided with these efforts. There are really, then, very few cases of the kind designated in the beginning of this paragraph, in which it is proper to disregard the rule laid down.

I would consider as exceptions to the rule some mild cases of disease, in which it might be proper to try the effect of doubtful remedies : but, of course, such experiments should be very infrequent, and should be very carefully made ; and great caution should be exercised in drawing inferences from them in regard to the applicability of the remedies to grave cases.

Some would, perhaps, be disposed to exclude from the operation of the rule cases of chronic disease. I see no reason why they should be excluded. There is as real, though ordinarily not as great, hazard in indefinite, aimless dosing in chronic, as there is in acute, disease.

Perhaps it will be thought that so strict a rule will prevent us, in many cases, from doing good, which, without this rule, we might, perchance, be able to do. This is undoubtedly true of some cases ; but the number of them will be very much less than the number of cases in which this rule will save us from doing harm.

Venturesome medication is captivating, especially to the young and enthusiastic practitioner ; and the charm is enhanced by the occasional brilliant achievements with which it is attended. Many of these achievements, however, are only apparent, being erroneously attributed to the remedies, when they are really the result of nature's efforts, and have been

effected, perhaps, in spite of the agencies to which the credit is given. While the bold practitioner has this brilliant but often false show of success, the better results of the practice of the cautious physician commonly make but little display; yet, when he does attempt to produce decisive effects by his remedies, so definite is his aim, that the result may be calculated upon almost with certainty.

This leads me to say, that the adoption of this rule will relieve the practice of medicine, to a considerable extent, of its uncertainty. The practitioner, always having definite aims, and generally accomplishing clear results, will become exceedingly exact in his observation; and his recorded experience will be of great value. With many observers at work in this way, noting down the results and comparing their records, the circumstances which should regulate the use of remedies will be accurately and extensively ascertained; and therapeutics will become immeasurably more definite than it now is.

Perhaps some will complain, that the rule which I have laid down hems in the practice of medicine within too narrow limits. But if the physician takes the broad view which I have presented of our means of cure, and attends to the regulation of them all, both the negative and the positive, he will find enough to do, even with the strictest application of the rule; and then the results of his definite observations under this rule will enable him, as his experience increases, to widen the range of his active interference in the treatment of disease.

It will undoubtedly be thought by the advocates of a bold practice, that the rule which I have stated lowers the dignity of the physician's office by restricting so much his *active* agency in combating disease; but, so far from this, it is really enhanced. Great skill is often required to do aright the little that is to be actively done; for there must be accurate and painstaking discrimination in order to distinguish between the salutary efforts of nature and the symptoms of

the disease, and to adjust the agencies which he employs so that they may coincide with those efforts, instead of thwarting them. It is a far more complicated, and therefore more difficult, plan of practice, if faithfully carried out, than that which is commonly pursued by those who are in favor of an active medication. It admits of no stupid and indolent submission to routine, nor of that mere show of industry which attends the practice of the theorizing practitioner. It calls for thorough, patient observation, in order that all the circumstances of every case may be properly regulated, and that every opportunity of exerting a decisive good influence by remedies may be promptly secured. There is sometimes a necessity for very active medication; and the physician is to estimate carefully the degrees of necessity in different cases. A truly rational practice takes so many points into view, and varies so much its adjustments to the infinitely varied necessities of the different cases, that it affords scope for the exercise of the very highest powers of mind.

Very dignified is the stand sometimes taken by the discriminating physician, when, after a careful survey of all the circumstances of a case, he comes to the conclusion that the patient will have a better chance of recovery if he for the most part be let alone, than if his case be actively treated. The disease may be violent in its character, seeming to the common observer to call for the most active interference of art, and the importunities of the friends of the patient for such an interference may be exceedingly urgent; and yet he remains firm to his purpose, using only such palliatives as may assist nature in weathering the storm. It is truly a "masterly inactivity," of which a frivolous and indiscriminating mind is wholly incapable. It is in strong contrast with the fretting and vacillating course which the indefinite doser is apt to pursue in such a case.

In following the rule which I have laid down, it is not required of the practitioner that he should know with abso-

lute certainty that his remedies will produce the effects that he contemplates. All that is intended is, that he must have good evidence that they will in all probability do so. Medicine is not an exact science, but is ranked among the inexact and conjectural sciences. Some go so far as to say that a good practitioner is only a good guesser ; but this is a gross libel on the character of medical evidence. The conclusions of the rational physician are founded upon a careful examination of evidence, which is often so complicated that it requires great skill to unravel it. There is difficulty, it is true, which leads the superficial and indolent to guess : but it calls forth the highest powers of observation and reasoning in the thinking and industrious ; and, with the exercise of proper caution, they arrive at conclusions which are clear and safe guides for them in their practice.

The inquiry, then, naturally arises here, what the nature of the evidence is upon which the physician must rely. There is great mistake often on this point. We see this in the discrepant opinions which are sometimes given by eminent physicians in regard to the use of active means in the treatment of the same disease. The relation of the remedies to the morbid condition fails to be recognized by either party ; else there would not be such opposition of views. If, for example, stimulating and depressing remedies are both used under the same circumstances by different physicians, and both parties make such show of success that it is difficult to decide between them, both must be in error in regard to the nature of the evidence to be relied upon in discovering the relations of remedies to the varying circumstances of disease ; and the error is a radical one. It is a failure in the very foundation of practical medicine.

The evidence which we have in regard to the action of remedies upon disease is twofold. First, there are some remedies that have a relation to disease which we do not understand. We only know that they cure the diseases to which they have this relation. A very marked instance of

this kind is the relation of cinchona to intermittent fever. We may theorize in regard to its *modus operandi* ; but we really know nothing about it. We only know that it arrests the disease.

But the remedies which have this occult but definite relation to disease are few in number ; and our evidence in this direction is therefore very limited. Most of our evidence is in regard to remedies that have altogether a different relation to disease. They are remedies which are found to produce certain effects upon the system ; and it is from a knowledge of these effects that we judge of their applicability in individual cases. In other words, we know something of their *modus operandi* ; and this knowledge is, or should be, the foundation of our use of them in the treatment of disease. Thus, it is what we know of the effects of bleeding upon the circulation that guides us in the use of that remedy for the relief of fever or inflammation. So the effect which we see calomel produce as a stimulator of the secretions is chiefly the ground of our use of this drug in many forms of disease. Examples might be multiplied ; but these are sufficient.

The second rule, then, which I would lay down for our therapeutics, is, that *the practice in each case should be based mostly upon what we know of the modus operandi of remedies*. I say, upon what we *know* ; for many attempt to go beyond what is known, and grasp at the occult in the operation of remedies, making their suppositions in regard to it the basis in part of their therapeutics. There is no objection to such suppositions if they are treated as such. They may indeed lead to some discoveries in relation to the action of remedies ; but when they are considered as established truths, and are acted upon in practice, they are legitimate sources of error. Nothing but what is actually known should be the basis of action. It is only by a strict adherence to this rule that medicine can be redeemed in any good measure from its uncertainty. Mere speculation, when it is mingled with our

actual knowledge, makes it uncertain and confused ; and this result may always be seen in the practice of the physician who is captivated with speculative views of the occult operation of remedies.

Even in the case of remedies that have a definite and almost specific relation to certain diseases, their use is to be somewhat governed by other known effects of these remedies, and their relations to other morbid conditions ; that is, in order to make their direct relation to disease always available, their *modus operandi*, in their indirect influence, must be well understood. Thus, in giving quinine as an anti-periodic, we must have some regard to incidental circumstances in the case, which, from other relations of this remedy, may essentially modify, or even prevent, its desired action.

It is such a knowledge of the *modus operandi* of medicines as I have indicated that gives us certain *general principles* of practice ; for these principles are but expressions of the relations of the several remedies, or classes of remedies, to different morbid states. It is in the application of these principles to the infinitely varying circumstances of individual cases that the rational practitioner exercises his skill ; the only exception being in the case of those few remedies that act upon disease in a manner to him wholly occult, and which some would call specific.

Although much is said about general principles, they have been greatly neglected by many practitioners. This is seen in the proneness, which has ever been so prevalent in the profession, to adopt fixed *modes* of practice. Obedience to general principles is inconsistent with the adoption of any exclusive treatment. It leads to a liberal eclecticism. If medicines were specifics, either wholly or partially, modes of practice would be proper ; but as nearly all remedies act indirectly upon disease, and the circumstances which should modify their application are almost infinitely variant, all the strifes which the profession has witnessed between opposing parties

in regard to modes of treatment have not only been useless, but they have materially impeded the progress of rational medicine. In most cases of this kind, while both parties were wrong, neither was wholly so. Very commonly, the remedies used by both are more or less applicable in the varied conditions which the different patients present.

I have said that the application of the general principles of therapeutics is to be greatly varied in individual cases, in obedience to their varying circumstances. Most of these circumstances are easily recognized: but some are discovered with difficulty, at least at the outset; and some are entirely hidden from view. These secret elements, existing in many cases, modify essentially the effects of remedies, and sometimes render improper the use of those remedies which the circumstances that are known in the case, taken by themselves, clearly call for. This suggests another rule of therapeutics; viz., that *we should be governed in our treatment of disease by the actual effects which we see our remedies produce.*

This very important rule is often disregarded. The physician who is fixed in the notions that he adopts is apt to disregard it, especially if he be given to theorizing. So, also, is the physician who, from indolence or lack of discrimination, readily falls into a routine of practice. On the other hand, there may be too great readiness to make changes in practice from supposed effects of remedies, or from too little patience in regard to effects which are expected. The judicious physician avoids both these extremes of fixedness and variableness.

It would take me into too wide a field to consider to any extent the causes which vary the ordinary action of remedies; but some of them it will be profitable to notice.

The idiosyncrasies which we occasionally meet with are such causes. An idiosyncrasy may be such in relation to a remedy as to call for much larger or much smaller quantities of it than are usually given, or it may be such as to forbid the use of the remedy altogether.

A variation of susceptibility under the influence of disease — a temporary idiosyncrasy, as it may be termed — is a much more common cause than the one just mentioned. The susceptibilities are always more or less altered by disease; and just in proportion to this alteration is that of the relation of remedies to the diseased condition. We see this strikingly exemplified in the large doses of opium which are borne in severe pain, and in the amount of cathartic medicine sometimes required in a torpid state of the bowels. These are palpable cases, familiar in the experience of every one; but physicians very generally are not aware how extensively the susceptibilities are changed in disease, and how wide a range of variation in the doses of medicine is required to proportion them accurately to the necessities of each case. It is a very common failure to give either too much or too little medicine. I am persuaded, that, in chronic diseases, there is often much harm done by administering remedies that are really appropriate in quantities that make too decided impressions upon the system. In many cases, a succession of gentle impressions from a remedy will do good, when ordinary doses of it would produce so strong an effect as to be injurious. Both in acute and chronic diseases, there is, in the common practice of physicians, altogether too little variation in the doses of medicine to suit the different susceptibilities of patients; and probably the doses are more often too large than too small.

There are some occult causes of disease which modify the action of remedies. This is especially true of epidemic diseases, as I have remarked in another part of this Essay. Although our general principles of therapeutics, deduced from the ordinary relations of remedies to disease, are applicable in such maladies, we cannot act upon them as freely as we can in diseases that are open and clear in their character. There is something in the disease beyond what we see, modifying the effects of remedies often in an unaccountable manner. We must use the remedies that we deem appro-

priate, therefore, with great caution, watching their effects, and depending very much upon what we observe of them to guide us in the further use of the remedies. We may find that the unknown substratum so affects the relations of the apparently appropriate remedies, as to make them mostly, if not wholly, inappropriate. The symptoms may be such, for example, as we very properly consider as calling for bleeding, and examinations after death may show a state of things that bleeding is ordinarily calculated to relieve; and yet that remedy may be really appropriate in but few cases, perhaps in none.

In yellow fever there is such an unknown substratum, preventing the physician from obtaining those satisfactory results which he obtains from active medication in most diseases; and it is because this fact has not been distinctly recognized that there has been so much contention in relation to modes of practice in this malady. Physicians have been reluctant to acknowledge how little they know of its nature, and have therefore applied their remedies with a bold hand; the advocates of each mode persuading themselves that they have better success than those who practise after other modes.

In commenting on the rules which I have laid down for our guidance in the use of remedies, I have indicated in incidental remarks what would be the effect of a full adoption of these rules upon therapeutics. One result would be a great diminution of the amount of medicine administered. There would be a considerable "approach towards the rational management of disease without the necessity of drugs." It would be an eminently "rational" change, because, so far from being a mere general diminution, it would be a diminution by reason of discriminating limitations; and, with this diminution, there would be, as the result of the same discrimination, a more active medication in some cases than physicians now practise. In short, there would be both a thorough discrimination in regard to the circumstances

calling for medication, and an accurate proportioning of the quantities of medicines to the necessities of individual cases; the range of doses being undoubtedly much wider than is now realized in the general practice of physicians.

But there are circumstances which are so decidedly opposed to the adoption of these rules by the profession generally, that it will be difficult to effect it. There are obstacles existing both within and without the profession. The community, for the most part, have great faith in the efficacy of medicine. This is shown by the demand there is for quack-medicines; which is so great, that their sale, with its enormous outlay in advertising and other machinery, constitutes one of the prominent branches of business in the community. It is shown also in the common language of the people in relation to the efficacy of medicines. They are inclined to attribute cures to particular remedies which have been used; and their inquiry continually is, What is good for this and that complaint? having the idea that remedies have specific relations to diseases. Many, it is true, talk of nature's powers; but they evidently have indefinite notions on the subject, and suppose medicine to be necessary to the cure of any disorder which is sufficiently grave to be called disease. The general disposition is to demand of physicians an active medication; and those practitioners who are fertile in expedients are most apt to secure a wide popularity. Homœopathy is satisfactory to its adherents only upon the ground that its infinitesimal doses are endowed with a wonderful power. It thus caters in the most effectual manner to the prevalent disposition, and secures to itself the credit which belongs to the recuperative power of nature,—the grand curer of disease.

In such a state of things, the physician is strongly tempted to accommodate himself somewhat to the expectations of the people. It is a work which few are willing to undertake, to go against the general current of popular sentiment, especially when it is a sentiment which it is peculiarly difficult

to correct. For this reason, the great mass of physicians are induced to administer more medicine than their uninfluenced judgment would dictate. The few who manfully resist the current find themselves obliged to use placebos to some extent, as means which are absolutely necessary to carry out their plans of medication with success. Especially is this the case with those who have not an established reputation.

But there are obstacles to the adoption of proper limitations of active medication, not only in the popular mind, but in the profession itself. There are obstacles in the intellectual tendencies of many practitioners. The *post hoc propter hoc* mode of reasoning in relation to remedies is not confined to the people; but it is also a common error among physicians. The general habits of the profession in the investigation of the effects of remedies are not such as they should be. This is seen in the prevalent readiness to use to a large extent at once any new remedies, and in the extravagant notions which, at the outset, many physicians entertain of their efficacy. There is collected, in regard to every new remedy, a mass of crude, incautious observations, which are paraded on the pages of medical journals; and these must be sifted thoroughly by a careful and continued experience, before its efficacy can be properly tested, and the circumstances which should govern its application can be ascertained. The result is, that much harm is done before the profession really become acquainted with the proper use of the remedy, especially if it be one of considerable power; and, from the fact that it had at the first an undeserved popularity, it is apt, after a little time, to sink in the public esteem below its real value. This process, which is passed through by every new remedy, shows that there is little appreciation, in the mass of the profession, of the difficulties of therapeutical observation, and of the necessity of such rules for our guidance in the use of remedies as I have laid down in this Essay.

Besides all this, it is for the interest of no inconsiderable portion of the profession to have the prevalent ideas of the power of medicine perpetuated. This is true of all followers of routine, who, in the present state of things, easily satisfy the expectations of the public. It is especially true of those who rely much upon the notoriety which they acquire by particular modes of practice. The adoption by them of the rules which I have laid down would involve the abandonment of their chief means of success. It is for their interest to discredit the efficacy of the recuperative powers of nature, and to have as much credit as possible given to their favorite means of cure.

But, notwithstanding the existence of these obstacles, I believe, that, substantially, the rules which I have stated as those which should govern our therapeutics are becoming more and more established in the profession. The tendencies are decidedly in this direction. Even in the community at large, there is, among its most intelligent portion, some movement counter to the general strong tide of public sentiment. There is not enough of it, however, to enable a physician to maintain his stand in giving uniformly sufficiently little medicine, unless he resort somewhat to placebos; and, although it is unpleasant to a high-minded man to do this, yet there is nothing derogatory to his dignity or honor in doing it occasionally, either to save himself from the irksome and useless labor of encountering the prejudices of bystanders, or to save his patient from the injurious effects of over-medication, which he might otherwise receive at the hands of another. The necessity of resorting to this expedient could be soon got rid of entirely, if prominent physicians of established reputation everywhere would make known, in their intercourse with their patients, their sentiments on this subject. It is time that physicians should, as we may express it, show their hand to the public more thoroughly than they have done. Intelligent men should be disabused by us of their errors in relation to the powers of

medicine, and should be taught the importance of other means besides drugs in the treatment of disease.

Medical men have a duty to perform in this respect, both to themselves and to the community, — to themselves, in placing our profession on the elevated ground which it ought to occupy; and to the community, in redeeming them from the injurious and sometimes fatal effects of the over-medication which is still so prevalent. Until this duty is extensively performed, so as to exert a wide influence upon the public sentiment, the practice of our profession must continue to be, in the eyes of the people, more or less on the same ground with quackery, at least in some of its forms. It is only by imbuing the public with the views brought out in this Essay of the comparative value of our different medical means, and of the discrimination that is needed to apply these means aright in the wide range of disease, that the community will be led to bestow that regard upon the profession which is its due. So long as a large portion of medical men yield a real or apparent assent to the popular notion that drugs are the great means of cure, and reputable physicians here and there appeal to this notion by giving undue prominence to particular remedies and to special modes of practice, the change in therapeutics, which I have indicated, must take place very slowly.

From what I have said, it is plain that the chief hindrances to this change are in the profession itself. This we should clearly understand, that we may make proper efforts for their removal. It is of little use to war against the quackery without, so long as we harbor in the profession influences that tend to place it on a level with quackery. These influences must be exposed, and at least neutralized by counter-influences, if not directly combated; and the movement which has been for some time so decidedly manifest in the leading practical minds of the profession, towards a very strict discrimination in medication, must be in every way encouraged.

There is much more to favor this movement now than there was when it was first set on foot. There were formidable obstacles to it then, which are now removed. The age of theorizing is past; and practical medicine is thus relieved of one of the principal hinderances to its advancement. The last general theory of medicine which gained an extensive hold on the profession was that of Broussais, — a theory which, quite in contrast with its predecessors, soon passed away under the advance of a strict and rational observation, imbittering sadly the last years of this great man's life; and the reign of observation is now so fully established, that no general theory of medicine can ever again be dominant. The encumbrance of profitless speculation is fairly thrown off; and the advance of medicine therefore, in strict investigation, is very rapid. The acquisitions that have been made in this century, and especially in the second quarter of it, are vastly greater than were ever made before in the same length of time.

The advance has been greater, however, in diagnosis than in therapeutics. The principal reason of this is obvious. It is very generally a more difficult achievement to adjust accurately our remedies to the varying phases of disease, than it is to make out a clear diagnosis. It is a much more compound intellectual process. There are more circumstances to be considered; and the relations of these circumstances are endlessly varied in the different cases. Therapeutics, therefore, really affords scope for higher mental powers, and especially for a greater compass of mind, than diagnosis. The general impression has been otherwise. This may be seen in the common remark, that, if the diagnosis be made out in any case, it is easy to treat it. The diagnosis, it is true, is the proper basis of treatment; but the same discrimination that has evolved it is to be exercised still more carefully and skilfully, in order to secure the adaptation of the curative means to the morbid condition, as it varies in its manifestations from day to day. For great suc-

cess, both in diagnosis and in therapeutics, there is required good sense in the highest meaning of that term, — a quality which is really both more rare and more valuable than great learning or brilliant acuteness of mind.

Another reason for the estimation which has been put upon diagnosis in comparison with therapeutics is to be found in the brilliant discoveries which have been made in the diagnosis of disease during the past half-century. To say nothing of others, Laennec has opened to us a vast and rich mine in diagnosis. Such discoveries could not but exert a wonderful influence upon medical men everywhere; and this influence has been enhanced by the marked general bent in the French medical mind towards the researches of diagnosis in preference to those of therapeutics.

Perhaps, considering the inherent difficulties attending therapeutical investigations, the advance has been proportionably as great in them as in diagnosis. That there really has been a great advance during the past quarter of a century is manifest from the facts which I have adduced in this Essay. And these facts show clearly what is the nature of this advance. It consists not so much in the discovery of new remedies, as in the discovery, one after another, of the circumstances that should govern us in the use of remedies which had already long been familiar to the profession. Though chemistry has made some almost new remedies out of old ones, by extracting their very essence, there have been really but few new remedies of any great value discovered. Our means of cure have been little added to in this respect; but they have been greatly increased by the discriminations which have been made in regard to their application. These discriminations have so varied the modes and degrees of their application as to add materially to the actual resources of the *Materia Medica*. While the gross amount used of most medicines is much lessened, what is used is generally applied with more clear and definite aim, and therefore accomplishes more good. At the same time,

less harm is done. In short, the use of medicines is not as large as it was, but is more definite and various, and therefore more available in meeting the individual variations of disease.

The future improvement in therapeutics is probably to be mostly in the same direction that it has been. Our resources are to be increased by multiplying their modes of application, more than by the discovery of any new resources. Some have indulged the hope that specifics of different kinds will be discovered for the cure of disease. Dr. Rush was wont to talk of the probability that some plant would be found that would cure consumption; and, even lately, Professor Alison, in his "History of Medicine," indulges in the anticipation that medicine will hereafter be much advanced by "the discovery of specifics, which may counteract the different diseased actions of which the body is susceptible, as effectually as the cinchona counteracts the intermittent fever; citric acid, the scurvy; or vaccination, the small-pox."¹ But, strictly speaking, there are no specific remedies, though there are a few that approach to this character. There may be some yet to be discovered: but we have no reason to expect this from our past experience; neither have we reason to anticipate very much in the discovery of new remedies of any kind. While the search for them should by no means be discontinued, it is not worth while to expend labor here which may be more profitably expended in farther observation of the relations to disease of the valuable remedies already discovered. The improvement in therapeutics resulting from such observation will probably be very much greater than it has yet been; for observation is all the time becoming more strict and accurate, and will increase greatly in these qualities if the profession come to be extensively

¹ How so acute a mind as Professor Alison's could think of the relation of vaccination to the small-pox as being similar to that of citric acid to scurvy, and that of cinchona to intermittent fever, I am at a loss to divine. The great fact that the vaccine disease will *prevent* the small-pox stands entirely alone. There is no other fact that has the remotest analogy to it.

governed in their medication by the principles that have been developed in this Essay.

This advance in therapeutics must be attended with a great diminution in the range of the *Materia Medica*. This must be largely sifted, that we may know what our reliable resources are. A useless polypharmacy has always encumbered it. Sydenham had some realization of this truth; for he speaks of the "immense stock of eminent medicines that we have long been pestered with," and seems to deprecate any addition to their number. Even as late as the beginning of the present century, the following strong language was used by Bichat in regard to the *Materia Medica*: "An incoherent assemblage of incoherent opinions, it is, perhaps of all the physiological sciences, that which best shows the caprice of the human mind. What do I say? It is not a science for a methodical mind: it is a shapeless assemblage of inaccurate ideas, of observations often puerile, of deceptive remedies, and of formulæ as fantastically conceived as they are tediously arranged." There has been a great improvement in the *Materia Medica* since Bichat's time, but more in the simplification of formulæ than in the diminution of the long array of medicines which the *Materia Medica* contains. Many of these ought to be excluded; and statements which are made in regard to others ought to be omitted, as not having yet been ascertained to be true by a careful observation. Such a sifting, as the strict observation contemplated in this Essay would give the *Materia Medica*, would probably show that many quite current ideas of the efficacy of medicines are mere vague fancies, and that there are comparatively few active remedies of real value; and, in relation to the multitude of new remedies which throng the pages of our medical journals with flaming representations of their efficacy, not one of them should be admitted among the real resources of our art till it has been fairly tested by experience.

I have spoken of observation as the means of effecting,

under the rules that I have laid down, the improvement in therapeutics contemplated in the proposition which is the subject of this Essay. And the inquiry arises here, By what method or methods of observation is this to be done? It is claimed by some, that the numerical method of Louis is the grand means of settling all questions of therapeutics, and indeed that nothing can properly be considered as definitely settled till it is verified by the tests of this method. If therapeutical investigations have the complex character that I have attributed to them, and if the circumstances which should regulate the application of curative means vary so much in different cases of the same disease, this method can throw but little light upon the action of remedies. It can be at best but an auxiliary in establishing some very general facts, and cannot aid us at all in adjusting the degrees in which remedies shall be applied in different cases, much less in arranging the combinations of remedies as the circumstances of each case demand. It fails in the very point in which it is claimed to be peculiarly serviceable; viz., in exactness. While it may prove some of the most general truths in regard to the relations of remedies to disease, it offers no tests for their exact and minute application under the various and fluctuating circumstances of individual cases. For example, it has proved the general truth that bleeding has commonly a curative influence upon pneumonia; but it teaches us nothing in regard to the character of the cases of this disease which call for this remedy, or the circumstances which should regulate its use; and even the general truth that it has proved in regard to this remedy was already abundantly proved by the common every-day observation of the profession. Indeed, I know of no truth proved by the numerical method, in regard to the application of remedies, which was not already established.

It is not my intention to go into an examination of the defects of the numerical method of observation; but I will merely remark, that, the greater is the number of remedies

that are applicable to any disease, the more signal is the failure of this method, from the great variation which is required in the different cases in the proportions of these remedies, and in the relative times of their use.

If therapeutics, then, were shut up to this method of observation alone, it would be made up of only a few bald generalities, and would not merit the name of a science. The industry of Louis, the founder of what is termed the Numerical School of Observation, is indeed to be admired; and his minute observation of disease is worthy of imitation: but his therapeutics, as seen in his great work on fever, is an entire failure, as might be expected from his adherence to so narrow a method of investigation. Any physician of ordinary attainments, using the common mode of observation under the guidance of plain good sense, has a much better knowledge of the proper application of remedies in cases as they arise, than Louis has with all his learning and acuteness. The truth of this remark, I think, would be manifest to any one who will candidly observe the manner in which he comments, in his work on fever, upon the four remedies, — bleeding,¹ tonics, blisters, and ice on the head, — on which

¹ I cannot see how any one, taking a common-sense view of the matter, can avoid coming to the conclusion, that, in almost all those cases reported by Louis in which bleeding was employed, it was not an appropriate remedy. In most of them, the disease was quite advanced before the bleeding was resorted to; and, in many of them, the symptoms were such as absolutely to forbid the practice; and, in some of them, there is decisive evidence in the record that it did harm. To sustain what I have said, I subjoin very brief notes of the cases in which bleeding was used:—

First case. On tenth day, venesection $\frac{3}{4}$ x. No improvement.

Second. On thirteenth day, forty leeches behind ears. No improvement. On eighteenth day, eighteen leeches to neck.

Fourth. After ailing three weeks, six days in bed; venesection $\frac{3}{4}$ viii.

Sixth. On seventeenth day, venesection [how much not said]; pulse 150; and face red and flushed before bleeding. After, pulse quicker and smaller, and respiration accelerated. Died at four, A.M., next day.

Seventh. On twenty-second day after first sick, twenty leeches to neck. No improvement. Prostration.

Eighth. Sick on 21st Oct.; “two venesections” on 26th; leeches to anus before. Venesection $\frac{3}{4}$ x. on 30th. On 31st, in morning, “face pale, covered with sweat, as if she were moribund; pulse very small and very feeble;” twelve leeches to ears.

he gives us his observations; and the attempt which he makes, in the conclusion of his work, to apply the numerical method of observation to the effects of these remedies, is a specimen of inconclusive and valueless reasonings, which has seldom had a parallel.

It is the minute and varied observation, of which the numerical method can take no account, that must be the basis of the advance in therapeutics contemplated in this Essay. It is this alone that can furnish the means of detecting all the limitations which the diversified circumstances of individual cases call for in the use of remedies; and it is the minute and complicated knowledge of the relations of remedies to disease, gained by this mode of observation, that

Ninth. On sixth day, venesection $\frac{3}{4}$ xv. No improvement. Next day, twenty leeches to ears. Died two days after.

Eleventh. On sixth day, venesection $\frac{3}{4}$ x. Died eighth day.

Fourteenth. On fourteenth day, twenty leeches.

Seventeenth. On ninth day, venesection $\frac{3}{4}$ xii. No call for it in the symptoms, and no improvement from it.

Eighteenth. On sixteenth day, venesection $\frac{3}{4}$ xvi.; forty leeches, next day, behind ears; venesection next day-after, and thirty leeches behind the ears.

Twentieth. On fifth day, eighteen leeches to anus; leeches also two next days. On tenth day, twenty leeches to jaws; and eleventh, twenty to neck.

Twenty-first. On fifteenth day, venesection $\frac{3}{4}$ xii.; seventeenth, eighteen leeches to ears.

Twenty-second. On tenth day, venesection.

Twenty-eighth. On third day, venesection. Fourth day, venesection $\frac{3}{4}$ x. Sixth day, twelve leeches to ears.

Thirtieth. On twenty-fifth day, twenty-five leeches to abdomen; and twenty-sixth, fifteen leeches.

Thirty-first. On ninth day, twenty leeches to neck.

Thirty-third. On seventeenth day, venesection $\frac{3}{4}$ x.; next day, fifteen leeches to anus; and, three days after, twelve leeches to ears.

Thirty-sixth. On third day, venesection $\frac{3}{4}$ xii.; sixth, sixteen leeches to ears.

Thirty-seventh. On sixteenth day, fifteen leeches to anus; and same, two days after.

Forty-first. On twenty-fifth day, ten leeches, after perforation of intestine.

Forty-sixth. On eighth day, venesection $\frac{3}{4}$ viii.; leeches before.

Forty-eighth. On seventeenth day, venesection $\frac{3}{4}$ x.

Forty-ninth. On tenth day, venesection $\frac{3}{4}$ xii.

Fifty-third. On tenth day, venesection $\frac{3}{4}$ x.; same, next day.

Fifty-fourth. Had been sick about two weeks; venesection $\frac{3}{4}$ xii.

I could give notices of symptoms in more of the cases before and after the bleeding to verify what I have asserted; but it would make this note too long.

constitutes true skill in the art of medicine. The numerical method not only cannot impart this skill, but a strict adherence to this method is a bar to its attainment.

It has been sometimes asserted, that all conclusions arrived at in therapeutics are really numerical results, as if physicians were always practising a sort of mental arithmetic as they gather the results of their daily experience. Numerical estimates, it is claimed, are made continually, although there may be no consciousness of it; and the usefulness of a remedy in any disease is determined by such estimates. So far from this, there is always more of weighing than of numbering in common, every-day observation; for the relative value of circumstances in disease is very properly considered more important than the frequency of their occurrence. This is true even of symptoms, but it is more emphatically true of the effects of remedies; and, farther, it is by direct observation of the effects of remedies that the judicious practitioner judges of their applicability more, much more, than by any gross results that may be expressed by numerals. Indeed, these gross results, which are so much relied upon by Louis and his followers, are apt to be fallacious, unless extreme care be taken to have comparisons made between cases that are very much alike in their circumstances.

The skill or tact which is acquired by common observation, carefully and thoroughly pursued, is capable of being much improved by extensive experience. While it must be in the case of every one, for the most part, the result of his own experience, yet it may be greatly cultivated by a comparison of his experience with that of others. But this comparison can seldom be made; for there is really little experience properly detailed in the records of the profession. We have an abundance of recorded *results* of observations; but these are comparatively of little value when they are not accompanied to some considerable extent with the observations themselves, and especially when they are mingled in a

confused mass, as has been too often the case, with theoretical speculations.

The grand desideratum in therapeutics is *recorded minute impartial observation*. We need what Sydenham termed a natural history of diseases. We want cases of every kind of disease reported fully, with their treatment. With such records, we should have the data for making an extensive examination of the effects of remedies, just as we do in a limited manner in our own private practice. Louis has set a noble example in this respect. Let a multitude of observers make similar minute records of cases of disease as they arise, and a great advance will be made at once in therapeutics. I say cases as they arise; for it has been too much the fashion to report either extraordinary cases, from which little really can be learned, or cases selected from the mass because they resulted successfully under some particular mode of treatment.

If the actual experience of the profession could be extensively gathered in the manner indicated, it would manifestly tend to give great definiteness to our views of the action of remedial means, by the acquisition of an extensive knowledge of the circumstances which modify their action. It would tend, therefore, to banish that polypharmacy which is the legitimate result of indefinite views, and to secure the advance in therapeutics which we have been contemplating.

There is one interesting point upon which I will comment very briefly before bringing this Essay to a conclusion. It is the influence which a general resort to preventive means, or, in other words, an obedience of hygienic rules, would exert upon the character of disease, and therefore upon its treatment. This influence would be of such a nature as to favor materially the deliverance of practical medicine from its uncertainties. This will appear from the following considerations: The less complicated disease is, the more readily and clearly do we make out both the diagnosis and the curative indications. But what is the chief source of the com-

plications of disease? Evidently that series of morbid impressions to which the various organs are subjected year after year, producing successively points of disease that are ready to be waked up into activity at any time when any general disturbance is produced in the system. And these impressions are made mostly by causes which are to a great extent preventible. We see this especially exemplified in chronic diseases. These, which are always disposed to be complicated, are so generally accumulations of results from a continued action of the causes referred to, that it has been said, and with much truth, that chronic maladies are the natural fruits of our disregard of the laws of health, while acute diseases are the direct inflictions of Providence. But even the latter are, to a considerable extent, self-inflictions, though much less so than the former; for not only are the complications which so commonly aggravate acute diseases, and perhaps constitute their chief danger, the results, in part or wholly, of previous transgression of hygienic principles, but very often the direct causes of these diseases can be avoided.

Observe, now, what would be the whole scope of the effect which a proper attention to hygiene would have upon therapeutics. It would manifestly give to diseases generally a much more simple character than they now have. It would, therefore, simplify the relations of disease to curative means, and thus favor that simplicity of treatment which should be our great aim in all attempts for the improvement of our art; and, more than this, prevention, in delivering unavoidable disease to a considerable degree from its usual complications, would diminish its severity. While, therefore, the interference of art would be much less needed than now in aid of the efforts of nature, whenever it should be called for, it would be directed with a much more definite aim than is ordinarily possible with the complex character which the present common neglect of the laws of health so generally gives to disease. And the fact thus demonstrated,

that, besides all the direct good effects that come from an attention to the laws of health, there is an indirect influence upon therapeutics coinciding with our attempts for its improvement, is a consideration of no small importance.

In treating the proposition which is the subject of this Essay, I have deemed it to be but a small part of my duty to demonstrate its truth. I have looked far beyond this, and have endeavored to develop principles, the guidance of which, in the treatment of disease, would continually advance our art, relieve it of much of its uncertainty, and eventually place it upon a satisfactory basis. I have aimed to mark out the channels into which the energies of the profession must be directed to accomplish this purpose. I have considered it very important that physicians should have a right appreciation of the relative value of the various curative means which they employ, and especially that they should be aware of the necessity of great discrimination in the application of them to various and complicated and fluctuating states of disease. I have endeavored to bring out fairly the true dignity of the physician's office, showing the wide scope which he should give to his investigations and to his curative means, and the great value of those means which are neglected, often with ruinous and sometimes fatal effects, when the world's idea, that the physician is the mere doser of the body, rules in the sick-room. But, while I have shown that drugs are really subordinate means of cure, I have endeavored to guard very carefully against the danger of discarding them whenever there is good ground for expecting curative results from their use. I have endeavored to inculcate the nicest discrimination on this point, in opposition to the influence of a mere general vague idea, that drugs are to be as little used as possible, which produces in the minds of so many practitioners an indolent and indiscriminating reliance on nature's curative powers.

The improvements which I have noticed as having taken place during the past quarter of a century afford us glimpses

of the future of our art which are indeed bright with promise; for they were accomplished under great difficulties, such as would of course attend the beginning of a new movement. And when these shall be to a considerable extent removed; when the profession, as a whole, shall adopt right principles in the administration of remedies and in the observation of their effects; and when a general rational attention to public and private hygiene shall both greatly lessen the amount of disease, and render it more simple in its character, — therapeutics must be placed upon a basis, of which its present condition affords us no adequate conception. That the change will be a great one, we know; but we have no means of estimating its amount, or of giving any thing but faint indications of its character.

If the principles which I have developed in this Essay be correct, the field of investigation offered by therapeutics is a more inviting one than has commonly been supposed. The achievements that may be realized here may even vie with those brilliant results which have of late attended researches in diagnosis and pathological anatomy. Our art, it is true, will never cease to be a conjectural one; but it may be redeemed from the unnecessary confusion and uncertainty which false principles of observation have brought upon it, and be made vastly more definite in its aims than it is at present. To attain this, severe and patient labor will be required. Careful observations must be extensively collected by the profession, after the plan which I have indicated; and they must be investigated in the most searching manner.

This is the great work which is now demanded of the profession. The time has fully come for it to be done. The preparatory steps have been taken; the many changes that have occurred in medical practice during the past century or more have been manifestly preparing for it. Results have been accumulating which will favor its prosecution; and the recent improvements and discoveries in diagnosis

furnish a fitting basis for the full inauguration of this work. To such a work as this, the eminently practical character of the American mind is particularly suited. The French excel us in the researches of pathological anatomy, and perhaps in diagnosis; the English surpass us in the literature of medicine: but, in therapeutics, we are superior to both, especially to the French. In the grand movement which I have described as going on in practical medicine, the American school (if we can say, that, in our new and forming state, we have a school) has been thus far in the advance, whether we regard the general movement itself, or the particular improvements which have contributed to it. Let us, then, enter heartily upon this work, and do what we can to rid our art of its encumbrances and defects, and introduce fully the reign of a truly RATIONAL THERAPEUTICS.

PUBLICATIONS
OF THE
MASSACHUSETTS MEDICAL SOCIETY.

VOL. I. — N^o. III.

Bronchitis and its Consequences :

A PRIZE ESSAY

BY DANIEL DENISON SLADE, M.D.

OF BOSTON.

On Hemoptysis as a Symptom.

BY JOHN WARE, M.D.

OF BOSTON.

BOSTON :

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1860.

C I R C U L A R .

THE Committee on Finance, having been directed to devise ways and means to provide for the payment of the expenses in the case of BARROWS *vs.* Drs. BELL, STORER and CARPENTER, intend to submit the following project at the meeting of the Councillors and Society in October:—

“The invested fund of the Society cannot be touched for any such purpose; and our means are limited to the income of the general fund and the annual assessments; from which our dinner, Braithwaite’s Retrospect, and ordinary expenses, are to be provided for, leaving very little, if any, surplus.

To entail upon our successors, for any prolonged period, a burden incurred by ourselves, does not seem either judicious or honest.

To suspend the distribution of Braithwaite would be a real privation.

To dispense with the Annual Dinner would be highly objectionable.

To attempt a private subscription would impose on a few, what fairly belongs to the whole; and to impose an additional tax — the only other alternative — might be regarded as burdensome.

It is believed that an effectual and equitable plan would be to appropriate to this purpose, for the term of three or four years, the sums now reverting to the District Societies (about \$650), and usually employed for merely social purposes. The burden will then be equally distributed; none of the great interests of the Society will be touched; no additional tax need be imposed; and the end would be speedily attained.”

S. D. TOWNSEND,
Chairman Comm. on Finance.

PRIZE ESSAY.

“TO WHAT AFFECTIONS OF THE LUNGS DOES
BRONCHITIS GIVE ORIGIN?”

“DISCERE ET AUDIRE.”

BY DANIEL DENISON SLADE, M.D.

OF BOSTON.

Extracts from the Records
OF
THE MASSACHUSETTS MEDICAL SOCIETY.

At a Meeting of the Councillors, Oct. 7, 1857,—

The Treasurer announced, that, through the liberality of one of its Fellows, the Massachusetts Medical Society is authorized to offer the sum of One Hundred Dollars to the author of a Dissertation which may be adjudged worthy of a prize by a Committee appointed by the Councillors of the Society, on the following subject, viz. :—

“To what affections of the lungs does bronchitis give origin?”

At a Meeting of the Councillors, Oct. 7, 1857, the following gentlemen were appointed the Prize Committee, viz. :—

Dr. CHARLES E. WARE.

Dr. OLIVER W. HOLMES.

Dr. HENRY I. BOWDITCH.

Dr. WILLIAM W. MORLAND.

Dr. CHARLES E. BUCKINGHAM.

At the Annual Meeting of the Society, May 25, 1859,—

Dr. WARE, Chairman of the Prize Committee, reported that only one Essay had been received, and *that one* had been unanimously adjudged worthy of the prize; and handed to the President the envelope bearing the motto of the Dissertation. On breaking the seal, the author was found to be Dr. DANIEL DENISON SLADE, of Boston, Mass.

ESSAY.

BEFORE entering directly upon the consideration of the subject proposed, it may be well to establish definitely, what we would understand by the term, Bronchitis.

We restrict the application of this term, to inflammation of the mucous membrane lining the bronchial tubes. This inflammation admits of being divided nosologically into two forms, the distinction referring to difference in seat. In one form, the disease is confined to the larger bronchi, and constitutes what is known as ordinary bronchitis. In the second form, the inflammatory action is confined to the smaller air-tubes, or, as is more commonly the case, it affects them and the larger ones also.

Another division of bronchitis is based on the duration and degree of the inflammation; hence it is commonly divided into acute and chronic.

The inflammation may be developed in the bronchi, either as a primary, idiopathic disease, or it may occur as secondary to some general disease. It is with the first of these that we have to deal in the following pages.

The general symptoms of bronchitis are too familiar to require of us any detailed description. We shall therefore proceed at once to discuss—*First*, the direct and primary results of bronchitis, comprising, under this head, the ordinary effects of this disease upon the mucous membrane of the air-tubes, and their contents; their connection with the

auscultatory and other signs—and, *Secondly*, the secondary and more permanent lesions of the pulmonary organs, which result from the former under certain circumstances. We shall devote attention more especially to the pathological states of the lung, connected with bronchitis—not presuming, however, to offer anything which does not already belong to science.

Bronchitis is essentially an inflammation of the mucous membrane lining the bronchi and their ramifications in the lungs. The first effect of inflammation of a mucous membrane is an increase in the quantity of blood ramifying immediately beneath the surface, with frequently some serous effusion into the areolar tissue, but a diminution, rather than an increase in the secretion of the membrane itself. Now, the effect of this state of things upon the bronchial tubes must be to produce a swelling and dryness of the lining membrane, accompanied with heat and pain, together with more or less tenderness; effects which fully account for the sensations felt in the chest in the early stage of acute bronchitis.

Again, the effect of this inflammatory process upon the lining membrane, is to produce certain changes in the auscultatory phenomena of the chest. As regards the sounds elicited by percussion, we know that the quantity of air in the cells of the lungs is not necessarily affected by this condition of the mucous membrane of the tubes, and consequently we should not expect to find any particular alteration in the resonance of the chest—and experience shows that such is the case. Not so, however, with the sounds of respiration. Here the changes brought about by inflammation are for the most part distinct and well marked.

Owing to the irregularly narrowed calibre of the air-tubes, the result of the thickened membrane, we have the well-known musical sounds, differing in degree as they proceed from the large or small bronchi. In other words, we

have the bronchial dry sounds of respiration, the sibilant and sonorous râles of the early stages of the disease.

So soon, however, as the inflammatory secretion begins to show itself, we have a decided alteration in the stethoscopic signs, the sounds which attend the respiration being of the *moist* kind, and differing according to the size of the tubes, and according to the changes in the secretion itself.

The varieties in the character of the secretion from the diseased mucous membrane are very great; and in order that we may satisfactorily understand the peculiarities to which they may give rise in the auscultatory phenomena, it will be well to give them a brief consideration.

In the earlier stages of bronchitis, the mucus thrown out is profuse, thin, watery and mixed with air-bubbles of various sizes. At this period it contains but few microscopic elements, a few altered epithelium cells being alone visible. At a later stage the mucus has assumed a yellowish tinge, is more tenacious and viscid, and contains numerous pus corpuscles, and more of the altered epithelium cells.

When the disease has existed for some time, and is nevertheless the result of an acute attack, and in those cases where there has been a recurrence of active inflammation, we usually find, on incising the bronchi, numerous yellowish pellets of a somewhat curdy consistence, which float in the more recent and thinner mucus. These masses are no doubt formed by the evaporation of the more fluid parts of the mucus, in consequence of the constant passage over it of dry air; the inspissated materials clinging to the walls of the air-passages, until detached and washed away by renewed exudations from the mucous membrane. Such a mass is not unfrequently seen plugging the whole calibre of one of the larger or smaller bronchi, in such a position as to leave no doubt "that in the act of inspiration it must have acted the part of a ball-valve," completely preventing the access of air to the part of the lung involved, by falling

back upon the orifices of the smaller bronchi, into which its size would prevent it from entering.

When bronchitis has existed for some time in a comparatively mild form, portions of the secretions become inspissated in the form of a thick, glairy, tenacious, somewhat transparent substance, sometimes resembling the raw white of an egg.

The effects of this increase of the secretion, and its morbid accumulations in the bronchial tubes, are easily recognized by auscultation, giving rise to the familiar fine and coarse mucous râles. Now, as long as the secretion is thin and watery, there is no serious impediment to the passage of air, which, as the râles just spoken of indicate, finds its way through the fluid into the minute ramifications of the bronchi and into the pulmonary vesicles. Not so, however, when the secretion within the tubes has become inspissated; the mucus having either become purulent and formed itself into the tenacious pellets before mentioned, or assumed the tenacious, stringy consistence, which we meet with in the chronic form of the disease. When, under these circumstances, expectoration is interfered with, either from the tenacity of the mucus, the debility of the patient, or from any other cause, the tubes become obstructed, the sound of vesicular respiration is much diminished at some points, and perhaps altogether lost, and the bronchial râles are correspondingly modified; the ordinary mucous râles being in part superseded by certain sounds which are well described by Dr. Williams.*

It sometimes occurs, where the inflammation is very intense and very extensive, that the swelling of the lining membrane which occurs at its commencement is sufficient to prevent the access of air to the minute vessels ramifying in the cells of the lungs, and thus speedily cause death by

* Diseases of Chest. Appendix A.

apnoea, before any secretion has been poured out into the tubes.

A more common mode, however, of the fatal termination of bronchitis, is by obstruction to the respiration, and consequent death from apnoea caused by the inflammatory effusion in the tubes preventing the access of air to the pulmonary cells. This may occur at any period of the disease, and arises either from the intensity of the inflammation and its rapid extension to the minuter tubes causing a profuse secretion to be poured into them, or from inability of excretion arising partly from its quantity and partly from the failure of the powers of life. This constitutes the suffocative catarrh of some writers—the capillary bronchitis of others; a form of the disease which generally runs its course with great rapidity, especially in children—and involving the pulmonary vesicles themselves, gives rise through a considerable extent of the lungs to those appearances known under the names of vesicular pneumonia and vesicular bronchitis.

Again, death may occur very suddenly and very unexpectedly in those cases where the disease is idiopathic, and where it has not appeared severe, by the accidental plugging up of one or more of the principal bronchi, by a mass of inspissated mucus. Andral relates two instances of this kind, in the "*Clinique Médicale*,"* in each of which the respiratory murmur became completely suppressed in the upper part of one lung, the patients having been previously affected with moderate bronchitis. The autopsy showed the signs to be due to an obstructive accumulation in the bronchi leading to the upper lobe of the lung; the absence of respiratory murmur combined with clearness on percussion had led, during life, to the diagnosis of emphysema.

It is hardly necessary for us to remark that the morbid

* See Appendix B.

anatomy, as far as it goes, is in perfect accordance with what we learn from the physical signs. Patients seldom die in those cases where the disease is confined to the larger bronchi, and which constitutes acute ordinary bronchitis; and in the other forms, we have much more frequent opportunities to observe the morbid appearances produced by inflammation of the air-tubes, in children.

An increased degree of redness of the mucous membrane of the bronchi, is almost constantly observed, varying much in degree and extent. It may be diffused, or in patches, and may vary in color from a bright crimson to a brown red. In many cases, no other change may be observed in the mucous membrane, but we frequently find it thickened and softened, sometimes to a most unusual extent.

Ulceration of the mucous membrane, which is occasionally met with in the bronchitis of adults, is extremely rare in children.

The inflamed bronchi contain a more or less abundant viscid, transparent, or opaque yellowish mucus. Traces of blood are rarely observed in the secretion.

In capillary bronchitis, the alterations of the mucous membrane of the capillary tubes do not always reveal the existence of the disease. That membrane is sometimes pale in the minute ramifications, and exhibits morbid changes only in those of medium size. The alterations of the membrane consist in redness, which is made up either of fine points seated in the membrane itself, or of arborizations seated both in the membrane and the cellular tissue beneath. It sometimes presents a granulated appearance, and it may be more or less thickened.

The bronchi are usually filled, and almost, in some cases, obliterated, by a substance of a yellowish-white color, non-aerated, and composed of a thick muco-pus. Portions of false membrane are sometimes also found mixed with the secretions just mentioned, while occasionally false mem-

branes alone are found in certain tubes. This false membrane may exist in patches, or it may constitute a lining to the whole extent of the bronchial ramifications. It is usually soft and but slightly adherent.

Not only are the contents of the air-tubes altered in character, but the tubes themselves often undergo a marked alteration in their calibre, becoming dilated. This dilatation is usually observable from the secondary bronchi to the minutest air-tubes, and, in the adult, sometimes becomes fusiform.

It was once supposed that this dilatation of the bronchi was due to the purely mechanical effect of the accumulations of the secretions within them. There is, however, no constant relation between the quantity of the liquids within the bronchi, and the degree of their dilatation. We must therefore look to two other circumstances as being the primary causes of the occurrence. These are, the weakening of the muscular fibres of the bronchi, by the inflammatory action, and the loss of the ciliary epithelium, which lines the air-tubes in their normal state, and which contributes, by the incessant vibration of its cilia, to keep them free for the access of air. These two circumstances lead to certain important changes in the pulmonary tissue, of which we shall speak presently.

Thus far, we have spoken of the immediate effects of inflammation upon the bronchial tubes, and upon their contents.

We have seen that not unfrequently, under certain circumstances, the bronchi become to a greater or less extent obstructed by mucus of a certain degree of tenacity. We have now to advert to that condition of the pulmonary texture which springs more directly than any other from this obstruction of the bronchi, and which is now known and described as collapse of the lung.

By collapse of the lung, is meant the return of that or-

gan to its foetal or unexpanded condition. It is in fact a state of atelektasis, or imperfect expansion of its vesicular structure. The terms, collapse, or *post-natal* atelektasis, are employed to contra-distinguish it from *congenital* atelektasis, the former being applied to imperfect expansion as it occurs in lung tissue after previous expansion, and the latter to the same condition as it exists in children, who have never expanded certain portions of the pulmonary substance.

The true nature of collapse of the lung was never understood, and its practical importance never appreciated, until the year 1844, when MM. Legendre and Bailly published in the "Archives Générales de Médecine" their researches on the subject. Since then, various observers have repeated the investigations of these gentlemen, and thrown new light upon the subject.

Among those who have contributed particularly to our present knowledge on this point, we may mention, besides MM. Legendre and Bailly, MM. Hardy et Behier, of Paris; Dr. W. T. Gairdner, of Edinburgh; Dr. West, and MM. Rilliet et Barthez.*

This new discovery in pathology is one of very great value, not only because it renders our knowledge upon diseases of the lungs more exact than it ever was before, but because it explains certain anatomical changes in these organs, never before understood.

Certain appearances, particularly in children, which were supposed to be the result of pneumonia, had long attracted the attention of pathologists by the wide differences which they presented from those which were produced by the same disease in the adult. Although it had been observed that children under five or six years of age died after presenting some of the usual symptoms of pneumonia, such as cough, dyspnœa, together with more or less extensive dul-

* See Appendix C.

ness of the chest on percussion, and some of the auscultatory signs of solidification of the lung, it happened not unfrequently that both the febrile and pneumonic symptoms very much diminished before any signs of approaching death appeared—and yet these very cases presented these supposed anatomical evidences of pneumonia in a very marked degree. So, again, with children who appeared to die worn out from various causes, and during whose lifetime no indications of inflammation of the lungs had existed.

So frequently were cases of this description observed, that it was assumed that pneumonia was an extremely frequent concomitant of almost all the diseases of infancy and early childhood; that this inflammation of the lungs, owing to certain unexplained causes, did not manifest its existence by its usual symptoms, and gave rise to alterations in the lung very different from what was observed in the adult. One of the principal peculiarities of this supposed inflammation of the lungs in childhood, was, that it did not attack any large portion of the lung, but was confined to isolated lobules, and sometimes even to a single lobule, the boundaries of which could be distinctly traced; whence it derived the name of Lobular Pneumonia. These isolated lobules presented a dark color, were solid, often depressed below the surrounding parts, which appeared healthy, and sank if thrown into water. In some cases, the affection was limited to a single lobule, the boundaries of which could be distinctly traced; while in others, although it happened that a cluster of lobules was thus dark and solid, still there was no gradual shading off from the darker to the lighter parts, so that it was evident, that however the disease extended, it was certainly not by any continuity of tissue merely.

The course of the disease and the results of medical treatment only seemed to add to the difficulties which presented themselves, when it was attempted to refer these

anatomical peculiarities to the same category of affections with the pneumonia of the adult. The usual antiphlogistic routine pursued in the case of the latter, seemed certainly to aggravate symptoms in childhood and to hasten death, while, on the other hand, a stimulant treatment, practised even through the entire course of the disease, seemed often to be followed by most satisfactory results.

Then, again, the rapidity of the changes that took place in the lung, was another perplexing and obscure character of the disease. For where air was heard freely entering on one day, none would be perceptible on the morrow, and on percussion there would be complete dulness over that part of the chest. Again, just the opposite would sometimes be observed; the breathing became distinctly audible, where on the previous day nothing could be heard, and the dulness was succeeded just as quickly by resonance on percussion.

That this condition of which we are speaking, should so long have been described by writers as Lobular Pneumonia, shows most forcibly the influence of a mere name, particularly as it was very evident, from the concurrent testimony of every one, that neither in its results, nor in its progress, was it even similar to inflammation of the lungs in the adult. Having once, however, been called Pneumonia, it continued to be called so, in spite of its peculiarities.

Even the almost exact resemblance which the lung in this condition presented to foetal lung, or to those portions which are characteristic of atelektasis, was noticed and remarked upon by many observers, without the slightest suspicion that these were identical.

Then, again, while these peculiarities of lobular pneumonia were thus commented on, it seems to us now very strange that no one should have thought for a moment of inflation as a means of solving some of the difficulties which surrounded its nature. This seems still more extraordinary, when we remember that this very means had already been

put into use, and had cleared up many doubts concerning certain appearances in the lungs of new-born infants, which had formerly been supposed to be the result of pneumonia in the foetus, or of some arrest of development.

At length, however, the idea of inflation happily occurred to those indefatigable observers, MM. Bailly and Legendre, and by them the experiment was carried into effect.*

Thus, by this very simple means, more light has been thrown upon the pulmonary affections of infancy and childhood, than can well be appreciated by us who enjoy the results to which this experiment has led.

We have said that obstruction of the bronchi was one of the most direct causes of collapse of the lung, whether this obstruction be the consequence of bronchial inflammation as it is in the great majority of cases, or whether it is the mere natural secretion of these tubes, accumulated for the want of power to throw it off. We must add to this another cause, viz., deficient respiratory power.

It has been found in the case of children, that collapse seldom occurs to any very great extent except in those who are exhausted and debilitated. The debility may be congenital, it may be the result of some wearing disease, or it may be due to unwholesome and enfeebling hygienic conditions. Now it is easy to understand that a child must necessarily, if placed under these circumstances, lose some portion of the muscular power by which alone a complete and efficient dilatation of the thoracic cavity can be produced, and, that when this is the case, the inspirations must be short and imperfect, and that portions of the lung most distant from the primary air-passages not being reached by the inspired air, will remain in an unexpanded or collapsed condition.

* Nouvelles Recherches sur quelques Maladies du Poumon: Archives Générales de Médecine. Jan., Fév., Mars, 1844.

Whether a mere deficiency of inspiratory force alone, without obstructing mucus in the bronchia, will give rise to collapse, is a somewhat doubtful point. MM. Legendre and Bailly are of the opinion that it is often due to the inspiratory power having been inadequate to overcome that natural elasticity of the lung which opposes a full dilatation of the organ. With this opinion Dr. West also agrees. Dr. Gairdner, however, does not believe that mere debility, apart from any obstruction in the tubes, is a sufficient cause for collapse in the child. He remarks that the very fact of the lesion being usually more or less *lobular*, appears certainly to indicate special circumstances of a local kind, as having a decided influence on the production of this affection.

* "It is sufficiently evident, *a priori*, that the occurrence of the *état fœtal* or of the collapse of the pulmonary air-cells in the distinctly limited lobular form in which it is so frequently observed, is not to be adequately accounted for by any influence, acting through the general system (such as constitutional debility), or by a force such as the elasticity of the lung, which not being subject to variation, and being quite equally distributed, cannot well be conceived to affect certain pulmonary lobules to the exclusion of others. The theory of MM. Legendre and Bailly is, as we have seen (and as Barthez and Rilliet have also pointed out), defective in attributing the *état fœtal* principally to the pulmonary elasticity, aided by everything which tends to obstruct the respiratory function. But although their rationale of the lesion is undoubtedly inadequate, we shall find that the observations of MM. Legendre and Bailly give a prominent position to one circumstance in connexion with the *état fœtal*, which has also attracted the notice of other observers. They state that the production of the *état fœtal* is *favoured*

* On Bronchitis. Gairdner, L. and E. Monthly, 1851.

by the accumulation in the bronchi of thick mucus, and in proof of this opinion, they assert that while they have met with this condition in eight cases (in enfeebled infants), independently of all pulmonary inflammation, it has in thirty-nine cases been found connected either with what they call catarrhal pneumonia (capillary bronchitis), or with bronchial catarrh; and in twenty-seven of these thirty-nine cases, it was the pulmonary affection alone which caused death. These details certainly present strong evidences of an intimate connexion between collapse of the pulmonary air-cells, and bronchial mucous accumulations."

After having given the observations of several eminent authors upon this point, Dr. Gairdner goes on to say—"From all these separate observations, converging as it were to a point, it follows clearly enough, we think, that the collapse of the air-cells, when occurring in a lung that has once been expanded, is, in all probability, a secondary lesion, and dependent, in the majority of instances, on a catarrhal condition of the bronchial tubes. This is indeed the most important conclusion arrived at by Dr. Fuchs in the memoir formerly reviewed by us."*

The main advance in the point of view assumed by Fuchs, as contrasted with that of Legendre and Bailly, consists in his having kept distinctly before him the fact of the connexion of the collapse of the air-cells with pulmonary catarrh, and treated this connexion throughout, not as accidental or of secondary importance, but as one involving the theoretical view of the dependence of the pulmonary condensation mainly upon the obstruction of the bronchi by mucus. He gives many cases in illustration of the effects of infantile bronchitis; but by far the most valuable facts which he brings to bear on the subject are from the experi-

* Die Bronchitis der Kinder. Leipzig, 1849.

ments of Mendelsohn and Traube, which leave scarcely anything more to be desired.

Among the most striking of these experiments were the following:—Tracheotomy being performed on a rabbit, a shot or slug (the size is not mentioned) was inserted into the trachea and impacted into the left bronchus by means of a probe. The animal died in two days. "The right lung was large and emphysematous; the left collapsed; the lower lobe in great part red, void of air, as also the upper lobe in some portions, in the midst of which were emphysematous parts. The whole lung could be inflated from the trachea (of course after the removal of the obstacle)." In other instances paper balls and solutions of gum were employed, with results in a great measure the same.

Traube's experiments were very nearly the same. A rabbit, having a paper plug inserted into the air-passages, died in somewhat more than twenty-four hours.

"The right lung was, in its whole extent, dark red, and uniformly solid to the touch; it had no appearance of air-vesicles on the surface. The lower lobe was completely distensible, and had, after insufflation, all the properties of the normal tissues. The upper lobe was left undistended for further examination of its physical condition. Superficial incision made perpendicularly into its substance showed a smooth, glancing surface, from which even upon pressure no blood flowed out, except where considerable vessels were divided. Portions of the lung sank completely in water; there was no fluid either in the trachea or bronchi."

The above experiments leave, as we think, no doubt as to the very considerable influence of bronchial obstruction in producing that physical condition of the pulmonary texture variously called collapse, lobular pneumonia, carnification, &c. The mechanism of this lesion, as produced artifi-

cially in the experiments above related, may be open to discussion; but no doubt can exist as to the fact that the existence of solid or fluid obstructions in the air-passages tends, in an eminent degree, to the production of pulmonary collapse, and that large portions of the lung may even be emptied completely of air in the course of a few hours if the obstruction be considerable.

We have already remarked that an inability to cough and to expectorate, and thus to remove the obstructing mucus, may be considered as one of the causes of collapse. Laennec supposed the expiratory force of respiration to be weaker than the inspiratory. He says—"The mucus secreted into the bronchi in consequence of pulmonary catarrh, must, especially if it is very viscous, present a great resistance to the free passage of air in inspiration and expiration; and we shall show, in speaking of the rôle, that this resistance often goes the length of producing complete, though momentary obstruction of a part of the bronchial ramifications. Now, as the muscles which subserve inspiration are strong and numerous, while expiration is produced only by the elasticity of the parts and the weak contractions of the intercostal muscles, it must necessarily happen that the air which has been forcibly driven beyond the obstruction in inspiration, will not be able to overcome it in expiration, and will be in a manner imprisoned, by a mechanism not unlike that in the condenser of an air-gun."*

Dr. Gairdner shows the fallacy of Laennec's theory, and refers to the experiments of Hutchinson and Mendelsohn, which prove that though *ordinary* inspiration is more of a muscular act than *ordinary* expiration, yet the residual effective force for overcoming adventitious obstruction is very considerably greater in expiration. "The *forced* or *muscular* expiratory act is in fact about one third more powerful as

* De l'Auscultation Médiate,

measured by its effect upon a pressure guage, than the extreme force of inspiration, and it is this force which is thrown into action when obstruction in the tubes is to be overcome."*

In the act of coughing, the air in the vesicles is brought to bear upon the obstructing substance within the bronchia, at a maximum amount of outward pressure, and with the additional advantage of a sudden impulse, so that the practical efficiency of the expiration in forcing air through obstructions, must be far greater than that of inspiration. It is easily seen, therefore, that if the secretions in the air-tubes be so abundant as to interfere materially with the entrance and exit of air, they must necessarily occasion collapse, either partial or total, of the parts beyond them, since not only does the air enter with difficulty, but being expelled with greater force and in larger quantity than it can be drawn in, the amount remaining in the vesicular structure must gradually diminish. Again, when the muscular force of respiration is diminished by debility, this effect of obstruction will be still more remarkable, for then the inability of the inspiratory act to replace the air driven out by expiration will be yet more marked than when the muscular powers of the body retain their full force.

There is still another mechanical condition which tends to produce collapse from obstruction, to which Dr. Gairdner refers. This condition is to be found in the form of the bronchial tubes.

The bronchi are a series of gradually diminishing cylinders, and if a plug of any kind, but especially one closely adapted to the form of the tube, and possessing considerable tenacity, be lodged in any portion of such a cylinder, it will move with more difficulty towards the smaller end, and in doing so, will close up the tapering tube much more

* On Bronchitis. Gairdner. L. and E. Monthly, 1850.

tightly against the passage of air than when moved in the opposite direction. If such a plug be placed over a bifurcation, it will, even if freely moving in the larger space in which it lies, be of sufficient bulk to fall back upon one or other of the subdivisions during inspiration, in the manner of a ball-valve, upon the orifice of a syringe, and thus completely to occlude it. From this arrangement of the parts it will happen that at every expiration a portion of air will be expelled which in inspiration is not restored, owing in part to the comparative weakness of the inspiratory force, and in part to the valvular action of the plug.

If cough should supervene, the plug may be entirely thrown out from its position, and the air of course be thus freely admitted into the obstructed portion; but if the force of expiration is only just strong enough to displace the obstruction sufficient to allow of the outward passage of the air, the inspiration will return it to its former position—and if this process is repeated for any length of time, it must finally end in perfect collapse of that portion of the lung supplied with air by the obstructed branches.

In summing up the causes which tend to produce collapse, they would seem to resolve themselves into these. First—the existence of mucus in the bronchi, which is more liable to produce obstruction according as it is tenacious; Second, weakness or inefficiency of the inspiratory power, however it may be caused; Third, inability to cough and expectorate and thus to remove the obstructing mucus.

Bronchitic collapse of the lung occurs in two different forms—the diffused, and the limited or lobular. Of these, the latter variety is the more characteristic, while the diffused form is the most common. The only real difference, however, between the two forms is in the number of lobules affected. Both present the same fundamental changes of the pulmonary tissue, which is generally of a dark violet

color, externally, and internally of a more or less deep brownish red, or mahogany tint.

But it may be much darker in color, when it is much engorged with blood. Its consistence is always changed, being more or less condensed; this condensation may amount to a mere diminution of the crepitation, or to a total absence of it, in which case portions thrown into water sink rapidly.

These portions are both more flaccid, and much less friable than the pulmonary tissue when in a state of red hepatisation. When cut into, the surface is seen to be smooth and uniform, having somewhat the appearance of muscle and presenting no granulations. It yields on pressure or to the knife, only a semi-transparent bloody serosity. Close examination shows that the organic elements of the tissue, the vessels, bronchia, cellular tissue, &c., can still be distinctly traced. If inflation be employed, the condensed portions can be distended, and their natural physiological characters can be more or less completely restored.

MM. Rilliet and Barthez, in the second edition of their work,* treat particularly of congestion of the lung as a very constant accompaniment in the state of collapse. They regard this congestion as being connected almost always with bronchitic inflammation, and as being not merely a passive state, but as exhibiting phenomena, which in many instances prove it to be an active condition. And at the same time that they acknowledge that a state of debility, prolonged dorsal decubitus, and the obstruction to the circulation thus occasioned, facilitate the production of this condition, and give to it the appearance of a simple passive congestion, they believe that there also exists (frequently if not always) a really active and even inflammatory movement. They formed this opinion chiefly upon these facts—

* *Traité des Maladies des Enfants.*

that they have not unfrequently seen the texture of the affected parts softened, and easily torn by the finger; that the tissues exhibit a swelled and turgid condition, and that, on pressure, a sero-sanguineous liquid escapes; and that there is present a serous exudation around the pulmonary vesicles, while the interior of the vesicles appears to be healthy.

It is this combination of bronchitis with congestion and collapse, which was formerly described by them under the names of lobular and generalized lobular pneumonia. The alteration to which the term Carnification is applied, they regard as different from the above, and as consisting in a simple collapse of the lung tissue, without the active or passive congestion which exists in the first form. The principal causes of this condition are, according to them, debility and catarrh.

Our observations thus far have been directed more especially to collapse of the lung, as it is a consequence of bronchitis in childhood. But there is certainly no such peculiarity in the structure of the lung in childhood, which should render it then exclusively liable to a morbid process, from which it is exempt at all other ages. In fact, it is not a little curious that so clear a distinction should have been drawn between pulmonary affections in infancy and early childhood, and those of the other periods of life. If we consult almost any of the authors who have written upon the peculiar and characteristic lesion of pulmonary collapse, termed lobular, we shall find that it is spoken of as an affection quite peculiar to childhood. Some of the earliest writers on the subject even distinctly state, that of the two forms of pneumonia, the lobular, and the lobar, the former is alone to be found in early infancy, and the latter alone beyond that age. The latest authorities in some instances maintain the same opinion, and even such an author

as Fuchs still asserts that true pneumonia does not appear to present itself in children below the age of five years, and this he asserts in spite of the distinct observations of Rilliet and Barthez, Legendre, Bailly and others as to the occurrence of lobar hepatization in young infants. Again, on the other hand, Fuchs describes the lobular collapse as a disease of infancy, and, like almost all the other writers, says nothing as to its occurrence at other ages. Of course, it is not to be supposed that there is any truth in the suggestion which is thus advanced—that there is a complete revolution in pulmonary pathology after the fifth year of life. We must, therefore, consider that any such idea is based rather upon imperfect observation, than upon any organic difference between the infantile and adult lung.

The identity of the affection in the adult with that in the child is now fully established, by several well known observers. This condition of the lungs is mentioned as having been of frequent occurrence in adults during the epidemic fever in Edinburgh, in 1847. Dr. Baly communicated the particulars of several cases of collapse of the lung in the adult, to Dr. West, one of which is so carefully and exactly told, as to leave nothing wanting in the description of lobular pneumonia.

“No effusion, lungs healthy, except in lower and posterior fourth of right inferior lobe, which is of a dark purple color, is depressed somewhat below the level of other parts—does not crepitate, feels solid, but flexible and tough almost like leather, and sinks quickly in water; the part having these characters is distinctly defined by boundaries of lobules. The whole lung being inflated, the part just described receives air with greater difficulty than the other parts, but at length becomes distended, lobule by lobule, and assumes the same pale red color as the rest of the lung. On cutting through the lungs and tracing the bronchi, it is found that the ramifications of those tubes which go to the

dark, contracted and condensed parts, are filled up with tough mucus, from which those going to other parts are free."

Rilliet and Barthez pointed out the resemblance between the infantile collapse and the "carnification" of the adult, described by Laennec as the result of pleurisy. Legendre and Bailly refer to the catarrhal affections of old persons, and admit that the diseases of the lungs in the two extremes of life greatly resemble each other. Dr. West enters more fully into the subject, and by a reference to the researches of MM. Hourmann and Dechambre, establishes the re-appearance of the phenomena of pulmonary collapse at the period of "second childhood," and he concludes from the description of typhoid fever given by M. Louis, that in certain diseases, which are attended with much depression of the vital powers, collapse of the lungs is by no means an unusual concomitant.

We might cite the observations of others were it necessary. So far, then, as these conclusions go, we may safely infer that collapse of the lung is by no means an uncommon lesion in the adult, whether in the lobular or diffused form. Moreover, that in all essential particulars, it is the same in children and adults, and that, in both, a certain amount of pulmonary collapse may be almost invariably found as a concomitant of fatal bronchitis. Again, that this condition of the lung bears so obvious a relation to obstruction of the tubes, that we are unavoidably led to infer the dependence of the former upon the latter.*

There is another condition of the lung, which occurs so frequently, in connexion with bronchitic collapse, that it requires notice. We refer to what is termed bronchial abscess.

We have already remarked that dilatation of the bronchia

* Appendix D.

was not unfrequently found upon examination of fatal cases of bronchitis. This alteration may affect either the length of the air-tubes, or only their extremities. In the former case the tube continues of the same size, or becomes gradually larger from one of its principal sub-divisions until it reaches the surface of the lung—in the latter case, a section of the lung presents an areolar appearance, from the presence of a multitude of little rounded cavities communicating with each other and with the bronchia, of which they seem to be a continuation.

The fact of these cavities being in reality dilatations of the bronchia, has been called in question by several medical writers. Among these, Dr. Gairdner states his opinion to be, that almost all the so-called bronchial dilatations, and all of those presenting the abrupt sacculated character which has been described by him, are in fact the result of ulcerated excavations of the lung communicating with the bronchia. These he designates as bronchial abscesses, corresponding to what the French writers term "Vacuoles." Dr. Gairdner says that in the centre of the collapsed lobules of a lung affected with acute bronchitis there are found, not unfrequently, small collections of pus, varying in size from that of a hemp-seed to double or treble that volume. These small abscesses present on section an appearance so much like that of softening tubercles, as to be very readily mistaken by many persons for these bodies; and the resemblance is all the greater, on account of the peculiar limited form of the condensations by which they are generally surrounded, which when felt by the touch from the exterior of the lung is exceedingly deceptive. In their interior, however, these little abscesses contain, in the recent state, a very fluid pus; moreover, they are often met with as acute lesions produced by a few days of illness, and without a trace of tubercle in any other organ. When the pus is pressed out of these abscesses in their recent

form, they are found to be lined with a fine villous membrane, while in other instances they are not abruptly limited, but the pus appears to lie in contact with the surrounding pulmonary tissue.

When the bronchi leading to the lung so affected are carefully incised, they are found much inflamed; their mucous membrane vascular, thickened and covered with pus; and some of them can be observed to communicate with the purulent collections, the mucous membrane having been, at the point of communication, destroyed by ulceration, and either stopping short abruptly, or becoming gradually incorporated with the false membrane lining the abscess. Sometimes these abscesses communicate not only with the bronchi, but also with each other; but more commonly they remain of limited size, preserving perfectly the direction and relations of the bronchial tubes.

These abscesses occur both in the diffused and lobular form of condensation from collapse of the lung, and sometimes both forms are met with in the same lung. Dr. Gairdner states that they unquestionably arise from the accumulation of pus primarily in the extreme bronchial tubes of the collapsed lobules. This view, which is also supported by the observations of MM. Barrier, Legendre and Bailly, seems to us much the most reasonable.

MM. Rilliet and Barthez regard these cavities as simple terminal dilatations of the bronchi, while MM. Hardy and Behier consider them as a lesion of a complex nature, partaking both of dilatation of the bronchi and of pulmonary emphysema. In Dr. West's lectures, they are described as a *true* lobular pneumonia, the result, however, of bronchitis.

"It does, however, happen now and then, that the lung is found in a condition which may justly be called *lobular pneumonia*, as the result of the extension to the surrounding tissues of inflammation beginning in the air-tubes. Patches of lung will then be interspersed through the sur-

rounding pulmonary tissue of a vivid red color, of various sizes, from that of a pea to that of an almond, irregular in shape, and not circumscribed exactly by the margins of lobules, as is the case with portions of carnified lung. This process going on in a number of different situations, the affected parts may at length coalesce, and a pneumonia, at first lobular, may thus eventually become generalized. Or, though this should not occur, the inflammation may yet go on in the isolated portions of lung to the infiltration of pus into its substance, or the actual destruction of its tissue, when a portion of the lung will appear riddled with small distinct abscesses, seldom larger than a pea, irregular in form, and communicating more or less evidently with a minute air-tube. They may be distinguished from the vomicæ produced by softened tubercle, partly by the absence of tubercular deposits in other parts of the body, and by their being almost always limited to a single lobe of one lung. Their own characters, however, are sufficiently well marked, for they are altogether destitute of those solid walls which the tubercular deposit forms around a phthisical cavity; though the yellow lymph which often lines them may be mistaken by the inattentive observer for tubercle."* It is not difficult to explain the mechanism of these abscesses.

When pus accumulates in the central bronchi of a collapsed lobule, its evacuation is prevented in two ways—first, by the absence of the expiratory *vis a tergo*; and secondly, by the thickened mucous membrane and its secretion closing up the air-tube in front. The coats of the minuter bronchi gradually become softened and give way to ulceration, and the pus thus formed soon begins to be surrounded by a false membrane similar to that of any other abscess in any part of the body. This false membrane gradually be-

* Diseases of Children.

comes intimately blended with the bronchial mucous membrane, becoming as it were a part of it.

This lesion which we have just described, although not so frequently met with in adults, is a very common consequence of intense bronchitis in children.

Before proceeding further, it may be well to consider what evidences we have during life of the presence of bronchitic collapse of the lung; in other words, what are the diagnostic symptoms.

The diagnosis of this condition of the lung must always be more or less uncertain, when it is of the lobular form, inasmuch as the collapsed lobules being irregularly disseminated through the pulmonary tissue, afford no physical sign by which we can detect their condition. The presence of this form ought, however, to be suspected, whenever in a chronic disease, and especially in the course of a bronchitic attack occurring in a feeble and debilitated person, particularly in a child, the breathing becomes excessively quick and labored, the pulse small and feeble, the skin pale and coolish, accompanied with a degree of prostration which the amount of bronchitis present would not seem to explain.

In cases of collapse, where a considerable or the greater part of a lobe is affected, the diagnosis is more clear and satisfactory than in the lobular form, in which we are obliged to depend almost entirely upon the rational symptoms. In the diffused form, we have some useful physical signs. These are, the existence of more or less dulness on percussion; feeble respiratory murmur, prolonged expiratory sound, and occasionally bronchial respiration, which, when they occur in connexion with bronchitis, are usually sufficient to render the diagnosis easy.

The only diseases, with which collapse of the lung presenting the same physical signs, could be confounded, are, pneumonia and pleurisy. On careful observation, however,

we shall note a difference in the character of the physical signs. Though we have dulness on percussion in collapse, it is not so absolute as that of pleurisy with large effusion, or that of confirmed pneumonia. The bronchial respiration in collapse is indistinct, distant, instead of being clear, metallic and near, as in pneumonia, and moreover is heard much more in the expiration than in inspiration.

Collapse is also distinguishable by the slight severity of the re-actional symptoms, by the absence of acute pain, by the greater severity of the bronchial symptoms, and by the fact that it rarely occurs except in enfeebled subjects, or in those laboring under severe bronchitis.*

Collapse of the lung from bronchial obstruction, being established, is there a probability that the portion or portions of the organ thus affected may be restored to their normal condition? In answer to this, we say, that there can be little doubt that such a condition, when recent, may be completely removed. For the inflation of the lung after death not only proves at once that there is no organic change, but that a sufficiently strong inspiratory force to overcome the opposing obstacle, was all that was required to allow the free entrance of air. The collapsed lung, however, labors under certain disadvantages as compared with that which is normal, in its power to remove such obstacles. In the case of the former, the inspiratory force alone can be brought into action, which would seem in many cases rather to increase the difficulty by driving the cause of the obstruction still further inwards—while, in the latter, on the contrary, the strong expiratory force, which when aided by the impulsive effort of coughing is by far the most powerful agent in removing bronchial obstructions, may be rendered available.

* Appendix E.

When we consider the frequent occurrence of attacks of bronchitis, and that too in the same individual, without any appreciable change which is permanent, and when we know that post-mortem examinations teach us that a very moderate amount of accumulation is sufficient to produce a certain degree of collapse of the lung, we are necessarily forced to believe that there is some inherent power in the bronchi themselves by which to get rid of obstructive mucus, inasmuch as we have seen the expiratory forces, under such circumstances, are thrown out of action.

It is not unreasonable to suppose that this power lies in the slow contraction of those circular fibres, the muscular character of which has been demonstrated by Reisseisen, and whose physiological properties have been illustrated particularly by the experiments of Dr. Williams.*

By these, it is shown that the contractility of the bronchi resembles more that of the intestines or of the arteries, than that of voluntary muscles or of the œsophagus, the contractions and relaxations being gradual and not sudden—a contractility in fact similar to that which empties the arteries of their blood after death, or which facilitates the passage of a calculus along the gall-bladder or ureters. The experiments to which we have referred, appear to prove that the contractility of the air-tubes is readily excited by mechanical and chemical stimuli, to the mucous membrane, showing conclusively, we think, that the bronchi have a most important power of removing obstructions, independent altogether of the forces of respiration. “When these forces are in active operation, indeed, the tonic or slow contraction will be in abeyance, or very slightly manifested, as the air-tubes will then be dilated to their full extent at each inspiration and expiration. But, according as the admission of air to any part of the lung becomes less

* Diseases of the Chest.

from obstruction, the detrusive action of the bronchial muscles will increase, being thus called into effective action precisely at the period when most required. Perhaps, also, the slighter contractions of these muscles may be in almost constant operation in the normal condition, to aid, by a kind of peristaltic movement, the outward passage of the physiological secretion. This secretion, comparatively small in quantity as it is, would almost necessarily tend to accumulate in the air-tubes (seeing that no efforts of coughing or forced expiration are made for its removal); and this would take place particularly in the smaller bronchi, which we know to be especially subject to mechanical obstruction, and in which the ciliated epithelium, so abundant in the cartilaginous bronchi and trachea, gradually gives way to transition forms, not constantly furnished with cilia.”*

We have already remarked that it is now the generally received opinion among medical authorities, that the condition of the lung which has so long been known and described under the titles of lobular pneumonia, generalized lobular pneumonia, pseudo-lobar pneumonia, marginal pneumonia, and, by some, as carnification, is, in fact, bronchitis associated with congestion and collapse of the lung. But we may ask, does not bronchitis also lead to inflammation of the parenchyma of the lung—to *true* pneumonia—lobular as well as lobar? Unquestionably it does, but inasmuch as the term lobular should now, we think, be restricted to the lesion which is due to bronchial obstruction, we prefer to substitute for it, that of *partial*, which is the term employed by M. Legendre, and by others at the present time. So that we have the two forms, partial and lobar. Of these, the latter is far the most frequent, although it was formerly

* On Bronchitis. Gairdner. L. and E. Monthly, 1851.

supposed that what was termed lobular was the more common, simply from the fact that bronchitis with collapse is more often met with, especially in children, than either partial or lobar pneumonia.

MM. Trousseau and Lasegne describe the pneumonia of children under the terms catarrhal and lobar. "Catarrhal (or lobular) pneumonia is a disease as distinct from simple (lobar) as variola is from erythema. This is seen in their respective mortality. Of twenty children who have been admitted into the hospital clinique, suffering from *simple* pneumonia, in six months, all have recovered; of nearly thirty who were attacked with *catarrhal* pneumonia, not one survived. Most of the first class of cases exhibited an excessive degree of acuteness which burnt out like a fire of straw; while several of the second, notwithstanding their fatal termination, commenced with very mild symptoms.*

Simple pneumonia hardly ever affects a child under two years of age, and rarely those of two or three, but becomes of more and more frequent occurrence as the child approaches adolescence. Its cause and symptoms resemble those of the adult, with some modifications. In the mild form of the disease, recovery takes place rapidly and in large proportion; but in its grave form, many cases are lost, whatever the mode of treatment.

Catarrhal pneumonia commences with a catarrh, which rapidly extends to the small bronchi, and then we hear numerous and small sub-crepitant râles disseminated over both lungs, and especially posteriorly. These râles may persist for four, six, eight, or fifteen days without any *souffle* becoming manifest; but sooner or later we hear a *souffle*, the resonance of the cries or the voice, or at least a prolonged respiratory murmur. While these latter sounds, common to simple and catarrhal pneumonia, are thus manifesting

* L'Union Médicale, 1851.

themselves, we find by the sub-crepitant râles that the capillary catarrh is still persisting in the rest of the lung. The disease has extended from the mucous membrane to the parenchyma of the organ. As more and more of the parenchyma becomes implicated, the fever becomes more continuous and intense, and the respiration more difficult, until the child dies exhausted.

In other cases in which the bronchial inflammation is very intense from the commencement, the lung becomes rapidly invaded over a large extent, and death takes place with great rapidity.

M. Trousseau compares these two affections to erysipelas and phlegmon. Erysipelas traverses the surface like the catarrh, and when it persists too long, it induces ulcerations of the skin, furuncles, &c.—just as the capillary catarrh induces suppuration of the lobules, and small abscesses of the lungs. Simple pneumonia, on the other hand, progresses like simple phlegmon, violent in its febrile re-action, but terminating rapidly.

We do not think it necessary, in this connexion, to give the physical and rational symptoms of pneumonia, which are so familiar to every one, but we shall proceed to describe briefly the anatomical lesions of *partial* pneumonia. These occur under two conditions. In one, the alterations are precisely the same as those of the lobar form, only, in the partial, the hepatization affects distinct patches of the pulmonary substance, thus producing hard nodules, scattered through healthy tissue. These nodules are irregular in form, and not perfectly circumscribed, but present, like the lobar form, the three stages of the inflammation—engorgement, red and gray hepatization. In the other variety of partial pneumonia, we find patches of hepatization, varying in number, and in size from that of a hemp seed to that of a pigeon's egg, more or less spherical in shape, hard to the

touch, and exactly limited. M. Legendre states that these hepatized parts become changed into a grayish, rough substance, of a fibrous appearance, a change which takes place at different points of the diseased mass, sometimes in the centre only, sometimes in their whole extent, and at others on their circumference.

Inflation of the lung after death has been much employed for the purpose of distinguishing between pneumonia and collapse. For while this process distends and restores more or less completely that portion of the organ which is completely collapsed, it fails almost entirely to have any influence on parts affected with true pneumonia—particularly if the disease has reached the stage of hepatization, and this of course is owing to the tissues being so agglutinated and indurated by the deposit of plastic lymph.

Inasmuch as pleurisy, to a greater or less degree, exists in a large proportion of the cases of pneumonia, we may regard bronchitis as giving rise indirectly to this affection. It does not, however, call for any special mention here.

HAVING discussed at some length the primary and direct effects of bronchitis, particularly in its relation to collapse of the lung, we shall now pass on to a consideration of the secondary and more permanent lesions, the result, for the most part, of this pathological condition.

In this part of our subject, we must especially acknowledge our indebtedness to the researches of Dr. Gairdner, who by his admirable memoir* on bronchitis, and by his

* On the Pathological Anatomy of Bronchitis. By W. T. Gairdner. Edinburgh, 1850.

various contributions to several journals, has done much towards the elucidation of pulmonary pathology.

Collapse of the lung, if it becomes permanent, gives rise to a peculiar form of pulmonary atrophy, which bears the same relation to the atrophy which surrounds retrograde tubercles, or which results from chronic pneumonia, that collapse of the lung does to recent hepatization. In the atrophy from tubercular disease, we find the tissue indurated, dark colored from carbonaceous deposit, and often charged with the remains of former exudation in the air-vesicles and their walls. But in the atrophy from collapse of the lung, none of these characters are present; the pulmonary tissue has simply disappeared, leaving a small amount of fibrous tissue, and occasionally a few specks of carbonaceous matter in its place.

The transition stages between collapse, which is removable by inflation, and permanent atrophy have been carefully observed in the bronchitic lung by Dr. Gairdner, in his memoir. They are also noticed as the result of congenital atelektasis by Hasse.

We transcribe the remarks of Dr. Gairdner on this point.

"In *simple atrophy of the lung*, the result of uncomplicated bronchitic collapse, the affected parts usually present somewhat different characters from other forms of pulmonary atrophy. They are, in part, reduced to a lax fibrous or areolar tissue inclosing the remains of bronchi and vessels; perfectly flaccid, free from all induration or abnormal exudation, and very frequently, in the purest form of the lesion, free even from that excessive deposit of carbonaceous pigment, which is so apt to accompany all chronic affections of the lungs; and in more recent specimens of emphysema, the anatomist will generally be able to trace several of the stages which I have indicated above, as intervening between collapse and atrophy. The atrophied lobules at the edge of the lung correspond to the indentations and grooves between the emphysematous parts.

“Simple atrophy, like the lesion which gives rise to it, occurs in the lobular and diffused form. The latter is chiefly found in the posterior portions of the lungs near their root. In diffused, simple atrophy, the lung is rarely entirely condensed, generally retaining a certain degree of crepitation, but being dense, tough, and fibrous; sometimes dark slate-colored, at other times not so, and in the most marked and exaggerated examples, crossed in every direction by fibrous processes or septa of considerable thickness and density, corresponding to numerous irregularities on the surface of the lung.

“Such lungs will always be found, when a fresh section is inspected with or without a lens, to present the most remarkable varieties in the size of the air-vesicles, some of which are entirely obliterated or very small, and others greatly expanded beyond the normal volume; the latter condition prevailing, of course, towards the anterior margins in the most emphysematous parts.”*

Hasse says, “When atelektasic infants die a day or two after birth, it is generally possible to dilate artificially the undeveloped parts. The depressed lobule is then seen to rise by degrees to the level of the rest, and to assume the color, permeability and other characters of sound lung. Up to this point, had other circumstances been favorable, perfect recovery might have taken place. When, however, the little patients have survived for weeks or months, this inflation seldom succeeds—or only imperfectly. At this juncture, the unexpanded pulmonary cells are for the most part coherent, a remarkable fact, seeing how long the lungs continue unexpanded in the foetus, without adhesion ever taking place. What ulterior transformations go on in the diseased parts it is not yet satisfactorily determined; it is, however, more than probable that not a few indurations

* On Bronchitis. Gairdner. L. and E. Monthly, 1851.

and depressions, especially the small calcareous concretions sometimes occurring without any obvious cause at particular spots within the lungs (generally at the back of the inferior lobes), are referable in some measure to the above source. At all events, it may be observed generally, that in atelektasis, the boundary line between the diseased and the healthy substance becomes less and less distinct, in proportion as life is prolonged.”*

The obliteration of the air-cells leading to atrophy of the lung has been received as a consequence of bronchitis by Dr. Stokes, and we believe the merit of first suggesting this, belongs to him.

In his work on “Diseases of the Chest,” he says, “Atrophy of the lung has been recognized in a variety of diseases, such as tubercle, pneumonia, cancer and pleurisy, but its direct connection with bronchitis has not been sufficiently examined.”

As might be expected, from the great frequency of pulmonary collapse, the lesion to which we have thus referred must occupy an important place in the chronic affections of the lung. Although it has long been customary to refer the various depressions, cicatrices, and slight indurations so commonly met with, indiscriminately, and as we must confess, rather vaguely, to pulmonary tubercle as the cause, there have been many observers who have expressed their doubts on the subject.

Dr. Gairdner remarks, “We have found cicatrices, *presumably tubercular*, to exist in between 40 and 50 per cent. of the hospital patients examined by us, nearly a third of the whole number examined being cases of phthisis pulmonalis—over and above this number, however, a large proportion of lungs contain more or less marked indications of partial atrophy, and often cicatrices and depressions of pervious parts of the

* Hasse. Pathological Anatomy.

surface. Sometimes we have even found calcareous concretions in considerable numbers, and so disposed, as to lead us to ascribe them to some other cause than tubercle. We cannot, with the evidence before us, doubt for a moment that many of these atrophic lesions have their origin in bronchitis and collapse of the lung; sometimes complicated with those local ulcerations which to distinguish them from tubercular ulcerations, have been called 'vacuoles' by the French pathologists, and by us, 'Bronchial abscesses.' The distinction between the tubercular and non-tubercular cicatrices is, however, we are ready to admit, often difficult, and not always possible. We find, accordingly, a considerable amount of variation in the results arrived at by those who have repeated Laennec's observations as to the cure of tubercle. M. Rogée, of Paris, finds evidence of the healing tubercle in 51 per cent. of the bodies examined by him in hospitals. M. Bondet, on the other hand, gives 86 per cent.; Dr. Bennett, of Edinburgh. not more than 40 per cent., probably a smaller proportion even than that indicated by Laennec."*

The pulmonary concretions which are frequently found in the midst of atrophied and indurated portions of pulmonary tissue, have been described by Bonetus, Morgagni, and by almost all the pathological anatomists, as often connected with asthma. The tendency to follow Laennec in considering these concretions as the result of cured tubercle, is now giving way to views of their origin which have been advanced principally by Dr. Gairdner, and which seem to us the more rational.

Laennec was the first to protest against the opinion that these pulmonary concretions were necessarily attended by symptoms. While he notices their frequent occurrence with or without the accompaniment of other lesions, and remarks

* On Bronchitis. Gairdner. L. and E. Monthly, 1851.

that they are frequently found in the centre of tubercles, he does not, however, deny that the osseous and cretaceous concretions may be developed independently of tubercle, although this must be very rare.

Now, while we admit that the healing of tubercle is a fact perfectly consistent with what is taught us by daily observation, we are of the opinion that the doctrine of Laennec, which includes all or nearly all pulmonary cicatrices and concretions under the designation of healed or obsolete tubercle, should at least be subject to some limitations. We therefore perfectly acquiesce in the conclusions arrived at by Dr. Gairdner, who says—"These lesions *are probably tubercular*, if they occur exclusively or chiefly at the apices and back part of the upper lobe of both lungs at once; or in the apex of one lung only, without trace of a lesion elsewhere; or generally diffused throughout both lungs, but chiefly in their upper lobes, and especially at their back part and apex; or, in any case, in company with characteristic traces of tubercular lesions in other organs.

"These lesions *are probably non-tubercular*, if they occur in one lung in a generally diffused form, without traces of tubercle even obsolete, in the other lung; or in the lower lobes to the exclusion of the upper; or at the edges of the lung in both lobes and not at its apex; or at the root of the lungs only; being in all these cases unaccompanied by tubercles or the traces of tubercles elsewhere."

At the same time that we are convinced of the accuracy of the above conclusions, we must in fairness state that cases will constantly occur in which no distinct opinion can be formed.

We come now to the consideration of another secondary and permanent result of bronchitis, viz., vesicular emphysema, a condition which, as we shall show, depends essentially upon collapse of the lung, and pulmonary atrophy, as its cause.

This lesion, mentioned by Bonet, Morgagni, Baillie, Floyer, and others, was first accurately described by Laennec, and by him considered as a consequence of bronchitis, an opinion which has been concurred in by the majority of pathological authorities since his day.

Emphysema of the lungs was described by Laennec, as consisting of two varieties—the one being a dilatation of the air-cells, and finally a rupture of them one into another by removal of their septa; the other a rupture of the air-passages directly into the inter-lobular areolar tissue. The distinction between vesicular and inter-lobular emphysema is too familiar to every one to require of us any description. We can only say that the modern means of investigation have scarcely added anything to the morbid anatomy of emphysema as known and recognized by Laennec.

Emphysema, then, is an unnatural distension of the pulmonary tissue with air; and the fact that artificial inflation of the lungs to an undue amount exactly imitates the appearances to which emphysema gives rise, shows incontestably that this is a mechanical lesion. Moreover, all the subsequent structural changes implied in the gradual removal of the septa and obliteration of the capillaries, are readily explained by the mechanical effect, of distension, as shown by the beautiful experiment of M. Poiseuille.

An instrument being adapted to the pulmonary artery of an animal, by which a given quantity of liquid was propelled with a given force through the capillaries of the lung, he found that this was effected in the normal condition in 29 seconds. M. Poiseuille now inflated the lungs so as exactly to fill the cavity of the chest; the time was still 29 seconds. On distending the lungs, however, further, so as to produce the appearance of a partial emphysema, the time required for the passage of the fluid became lengthened to 62 seconds; when it pervaded the whole lung in consequence of excessive distension, 129 seconds were required, and the fluid

returned from the pulmonary veins mixed with some bubbles of air.*

The results of this experiment show us that whenever the air-cells are abnormally distended, the flow of blood through the ultimate capillaries of the lung must be retarded and even obstructed; a condition which readily accounts for the structural changes, the absorption of the walls of the air-cells, and the obliteration of vessels observed in the latter stages of emphysema.

A great number of conflicting theories have been advanced to account for the development of pulmonary emphysema. Let us examine a few of these.

The theory of Laennec ascribes emphysema to mucus in the bronchi, and accumulation of air behind the obstruction; that it is produced in the act of expiration, and is the result of violent efforts of coughing or other forcible expiratory acts. Now, in answer to this, we would say, that what we have already, as we think, satisfactorily shown in the preceding pages, proves clearly that obstruction of the bronchi has precisely the opposite effect to emphysema, giving rise to *emptying of the air-vesicles and collapse of the lung*.

Every one who has studied the anatomy of this pathological condition, knows that the emphysematous portions of a lung can in most cases be inflated from the bronchi with the greatest ease, whereas in collapsed lung very considerable resistance is often opposed to its inflation from the air-tubes—conclusively showing that the emphysematous parts of the organ are free from obstruction, while the collapsed parts are not.

Again, the usual seat of emphysema leads to an inference directly opposed to the theory of Laennec—for while this condition is usually found to occupy the anterior edges of

* Bulletin de l'Académie Royale de Médecine, Vol. viii.

the lung, the accumulations of mucus in bronchitis generally take place at the posterior and lower parts of the organ, which are, especially in the adult, the principal seat of bronchitic collapse.

With regard to that portion of Laennec's theory, which conceives that emphysema is dependent upon expiration, and that it is produced by repeated forcible expiratory acts, our evidence would seem to be somewhat contradictory. The most serious objection to this appears to be that the expiratory act is mechanically incapable of producing distension of any portion of the lung. The act of expiration tends entirely towards emptying the air-vesicles by the uniform pressure of the external parietes of the thorax upon the whole pulmonary surface; and even when the air-vesicles are maintained at their maximum or normal state of fulness, by a closed glottis, "any further distension of them by the expiratory force is as much out of the question as would be the further distension of a bladder blown up and tied at the neck, by hydrostatic or equalized pressure applied to its entire external surface." The air-vesicles can sustain no distending pressure from the column of air *within* the tubes, as that air only becomes compressed in virtue of a force acting on the *exterior* of the lung, which opposes exactly as much resistance without as it creates pressure within.

Have we any direct proof that cough, however violent, can in itself produce emphysema apart from the other accidents of bronchitis? In croup, laryngitis, and some other affections, we have cough even more violent than that of bronchitis, and yet we are not aware that these are known to cause emphysema. Laennec asserts, and it is a prevailing idea, that this condition of the lung is of frequent occurrence among players of wind instruments. But this assertion is devoid of proof, and rests, so far as we can discover, solely upon Laennec's statement. Even if it could

be shown that such was the fact, we must also take into consideration the great tendency to other pulmonary affections in this class of individuals before the question could be decided on such grounds.

Thus, so far as former experience and observation go, it would seem to be impossible that emphysema could be produced by any act of expiration, however forcible.

We have now, however, what would seem to be direct proof in favor of this theory, in the extraordinary case of M. Groux. In this individual, the lung is distinctly seen thrown forward and distended at every forcible expiration, such as is produced by ordinary coughing, or by any other sudden expiratory act, forming a well-marked bulging out of the parietes of the fissure. This certainly seems strong evidence in favor of the expiration theory, and as such we must receive it. We shall at least be safe in saying that emphysema *may* be produced by the expiration-force.*

We have next the inspiration theory, which refers emphysema to an increase in the force with which the air penetrates into those portions of a lung which are healthy, the remaining portions being occluded. This theory is supported by Dr. Williams and by others of authority, and is based upon facts, but still does not cover the whole ground; moreover, it is inconsistent with these facts—that the inspiratory power of the chest is exactly limited by its capacity; and that even when a portion of lung is impervious to air, the inspiratory force can no more distend the air-cells to the degree observed in emphysema, than it can do so in the normal state. There is clearly, then, another condition necessary, besides mere occlusion of the air-vesicles in a part of the lung, to the mechanical completeness of the inspiration-theory of emphysema. And this is *partially diminished bulk*;

* See Appendix F.

—in other words, pulmonary collapse, or permanent atrophy of some portion of the lung.

Dr. Gairdner, in his *Memoir on Bronchitis*, gives an analysis of forty cases of emphysema collected from a series of 502 miscellaneous cases of disease, and without any special reference to this inquiry—all but two of these cases are noted as presenting some form of condensation of the pulmonary texture, such as collapse, lobular or diffused atrophy, with induration, concretions, hepatization or tubercle. An analysis of these cases of emphysema gives the following result—that the atrophic lesions alone stand in any special relation to emphysema, while hepatization and tubercle are found among emphysematous, in nearly the same proportions as among mixed cases.

“It is therefore clear that direct observation points, in a manner not to be mistaken, to partial atrophic disease as the invariable accompaniment of emphysema of the lung.

“But even had this not been so clearly shown in the manner above indicated, it might have been fairly enough argued, from the mechanical conditions by which the lung is confined within certain limits of size. The emphysematous lung generally appears, as a whole, more voluminous than natural; but a moment's consideration will show that this is entirely from the fact of its not collapsing, like the normal organ, on being removed from the chest. The lung is, in fact, as was well known to Laennec, extremely restricted as to real enlargement by the bony case in which it is confined, and which does not admit of expansion beyond the capacity to which it is brought by a full inspiration. Were the emphysematous lung really increased in volume, as a whole, even to this amount, it is quite clear that there could be no respiratory movement; the thorax being maintained by the lung in a state of perpetual distension, instead of being itself the cause of the expansion of the lung. But as in most emphysematous lungs, the air-cells are individually in-

creased in size to a very marked extent, it is clear that in a case of very general or 'universal' emphysema, such as is described by Louis and others, the thorax could not, by any conceivable amount of yielding of its parietes, give space for the hypertrophied organ, except upon the supposition that the enlargement of the emphysematous parts is accompanied by a nearly corresponding diminution of bulk in others. This conclusion becomes still more evident, when exact measurement is applied to the emphysematous, as compared with the healthy chest; we have, in fact, found, that so far from the chest being enlarged to any considerable extent in this form of disease, there is great reason to believe that it is usually smaller than natural, the arching of the front and the increase of the antero-posterior diameter being more than counteracted by a diminution in all the lateral diameters, particularly at the base of the chest."*

Both on the ground of personal observation, and of inference from the mechanical conditions, which prevent enlargement of the whole lung, Dr. Gairdner asserts, and as we think with truth, that in emphysema, the increase in size of the affected portions of the lung is always accompanied by diminution in the volume of other portions, frequently in the form of simple atrophy or of atrophy with induration.

From these facts it may be safely assumed that emphysema is a lesion occurring from mechanical causes in those parts of atrophied and collapsed lungs to which air has the most free access; in other words, it is produced by atmospheric pressure in the comparatively sound portions of such lungs; that it is an *increase in volume* of those portions of the lung permeable to the air, to supply the place of diminished volume in those parts from which it is excluded. It is produced by the expansion of the chest in inspiration, and is dependent simply upon the normal expansion-force being

* Brit. and For. Med. Chi. Review, 1851.

exercised under the abnormal conditions to which we have alluded. It cannot be produced in health, by *any* amount of inspiratory violence, because the lung admits of being readily and easily expanded, without straining any of its air-cells, to the full volume permitted by the expansion of the thoracic walls. It cannot even be produced in disease, except when the volume of the lung is directly diminished in relation to the space which it has to fill in inspiration. "Emphysema, therefore, is never found in connexion merely with pleuritic effusion, or with hepatization, or with tubercle. It cannot be produced when large cavities exist in the lung, even in connexion with atrophy, if they have very flaccid walls, and be distributed through all its lobes; for under such circumstances, the cavities are expanded by the inspiration-force more readily than the air-vesicles can be forced beyond their normal maximum. Hence the comparative rarity of emphysema in connexion with rapidly advancing tubercle, while it is generally observed to be the accompaniment of the retrograde or contracting stages of that affection."

The various changes impressed upon the form and movements of the chest by the sequelæ of bronchitis, form a marked illustration of the doctrines which we have put forth regarding the supervention of emphysema on pulmonary atrophy and bronchitic collapse. These have been made the subject of special investigation by Messrs. Rilliet and Barthez, by Dr. Sibson, as well as by Drs. Gairdner and Rees. The limits of our essay will only allow us to allude briefly to this portion of our subject, and to offer a few of the observations of Dr. Gairdner.

Many irregularities in the form of the chest are undoubtedly owing to bronchitic attacks in infancy and early childhood, either modifying the expansion of the lung or producing subsequent partial collapse of its tissue. To this source may be traced many of the disorganizations of the

lung which are revealed by morbid anatomy in subsequent years.

That the respiratory motions of the chest may be seriously interfered with at certain points in the adult during bronchitis, although not to so great an extent as in childhood, owing to the greater solidity and firmness of its walls, is well known to every medical man, and has been particularly demonstrated by the observations of Dr. Sibson.

It is evident to the eye, that while even in the severer forms of bronchitis, the chest on the whole expands both in its upper and lower zones, the movement of the latter is much more restricted than the other, and that while the lateral expansion of the thorax is circumscribed, the anterior movement or projection of the sternum and costal cartilages is usually even exaggerated. The modification in the form of the chest, which supervenes on this condition, is well known as the "emphysematous chest," being marked by increased fulness and prominence of the whole anterior portion, by a diminution in the lateral and by a relative increase of the antero-posterior diameter of the thorax.

The relations between these thoracic changes and the existence of vesicular emphysema have never been called in question, so far as we know, by any writer on the subject. The observations of Dr. Gairdner would, however, seem to lead him to different conclusions from those usually maintained. While he admits that the permanent modification of form is the consequence of the peculiarly altered movements of the chest, and that the diminished lateral motion is the direct effect of the diminished expansion of the lung in consequence of bronchitic accumulation with partial collapse and atrophy of its tissue—he thinks that to ascribe the increased movement and consequent deformity of the anterior portion of the chest to the production of emphysema would be an error of logic and observation.

He believes that whatever be the relation of pulmonary

emphysema to the emphysematous chest, it is not directly nor indirectly the cause of that deformity. He thinks it susceptible of demonstration, that the abnormal motion of the chest always precedes both the deformity and the emphysema; that the emphysema frequently precludes the deformity, but in its more chronic and exaggerated forms generally follows in its wake; that a certain amount of emphysema may exist without deformity, and a certain amount of deformity without marked emphysema. He arrives at the probable conclusion, that both emphysema and the emphysematous chest depend on the altered respiratory movements in bronchitis, and on the exaggerated respiration necessary to overcome the tendency to bronchitic collapse of the lung.

From these observations, then, we may safely deduce the following conclusions, in regard to the relation of emphysema to the emphysematous chest.

In order to overcome the bronchial accumulation, the result of bronchitis, forced respiration is thrown into action, by which the breathing, instead of being diaphragmatic, becomes to a high degree costal and thoracic. This peculiar state of the respiration serves to bring about decided changes, both in the chest and in the lungs. Those parts of the chest which are acted upon by the most powerful muscles, acting too at the greatest mechanical advantage, take upon themselves the principal function, while the motions of the other portions tend to fall into disuse. So those portions of the lungs which are in contact with the most movable parts of the chest, which are the anterior and upper, as well also as the lower edges, are subjected most directly to the respiratory force, thereby tending to the development of emphysema; while the root of the lung, and its lateral and posterior surfaces, receive the inspiratory impulse secondarily or in greatly diminished ratio, which leads to bronchial accumulation, and to consequent pulmonary collapse and atrophy.

These irregularities of movement of the thorax tend ultimately to affect its form, producing, in both the child and the adult, an increase of the antero-posterior diameter of the chest relatively to the lateral, and of the upper zone relatively to the lower. "The deformity of the chest usually accompanying emphysema of the lungs is neither a cause nor an effect of that lesion, but both emphysema and the 'emphysematous chest' depend on the altered respiratory movements in bronchitis and the exaggerated respiration necessary to overcome the tendency to bronchitic collapse of the lung."

A certain amount of emphysema of the lung is of very frequent occurrence in the aged. This was first pointed out by Magendie, and this form of the lesion has since been described by many pathologists as a peculiar one, constituting a kind of senile atrophy of the pulmonary tissue. However, there is little doubt that this lesion is the concomitant of chronic bronchitis which is so constantly met with in individuals advanced in life, and in itself is hardly entitled to the name of a disease distinct from the other evidences of decaying nature.

We have yet to speak of certain pathological alterations of the bronchi, as among the secondary results of bronchitis. These consist of their permanent contraction and obliteration, as well as their dilatation. The first of these is slightly alluded to by Andral, as a consequence of bronchitis, having been entirely passed over by Laennec. As an independent affection it has been made a subject of special attention by a French observer, M. Reynaud, in 1835*—and the conclusions at which he arrives have been adapted to the subject of bronchitis by Dr. Stokes—with more or less modification.

* *Memoir De l'Académie Royale de Méd.*, Vol. iv., 1835.

Reynaud was led by his observations to the opinion that obliterations of the bronchi were quite frequently met with. Hasse, however, suggests that he may in some instances have confounded simple obstruction produced by the presence of exudation of lymph in plastic bronchitis, and acute obliteration arising from organization of the exudation or adhesion of the walls of the tubes. The forms of obliteration and contraction described by Reynaud are numerous. Thus the lesion may be continuous, extending either over a single tube or a series, or even in some cases over all the tubes of a lobe—or again, the tubes may be narrowed or closed at one or more points, as if a ligature had been applied. More or less dilatation of some portions of the same tube or bronchial division may accompany contraction and obliteration of other portions. Thus a small bronchus may be dilated into a pouch-like cavity, just before the point of the obstruction.

In some cases this dilatation terminates all traces of the bronchus.

Again, a tube may show a succession of marked irregular dilatations through its whole length, at some parts having a sacculated character, at others being irregularly cylindrical.

Whatever may be the particular variety of the lesion, it is very obvious that it must tend to induce other physical changes in the pulmonary organs. And herein is where the lengthy memoir of M. Reynaud is singularly deficient—for he has failed entirely to connect these alterations of the bronchi with those of the pulmonary tissue with which they are constantly associated. The extent of these consecutive changes will of course depend on the size of the bronchial tube or tubes which are contracted or obliterated, as well as on the amount of obstruction. Whatever may be the amount of the obliteration, more or less atrophy and collapse of the tissue will be invariably found in connection with it, and this may be either simple bronchitic collapse,

or some of the more complex varieties which proceed from other lesions, such as tubercle or chronic hepatization.

The immediate local causes of diminished calibre of the tubes are situated within or exterior to the bronchi. Within the tubes, they consist of plastic exudation upon the mucous surface; of a tuberculous deposit; certain morbid excrescences; hypertrophy of the lining membrane; sub-mucous deposits of serum or lymph. The causes situated exteriorly act by producing pressure on the tube or tubes. Among these we may enumerate enlarged bronchial glands, various kinds of tumors, pleuritic effusions, &c.

If the obliteration of the bronchi has received but very little attention from pathologists, it is far different with the opposite condition, the dilatation of the bronchi, which, since its description by Laennec, has been almost universally admitted to be at least connected with, if not produced by bronchitis. We have already alluded to this lesion in the early part of our essay, but it requires of us here a more extended notice.

Dilatation of the bronchi was scarcely known to pathologists prior to the researches of Laennec—not certainly on account of its rare occurrence, but rather because this condition was overlooked at autopsical examinations. The mode in which it is produced is an interesting point of pathological inquiry.

We have already remarked that it was formerly supposed that this condition of the air-tubes was due to the mechanical effect of the accumulation of the secretion within them. This was the opinion entertained by Laennec, but the explanation is now deemed inadequate, and the accumulation is regarded rather as the effect than the cause of the dilatation. A morbid condition of the walls of the air-tubes, impairing their elasticity, and rendering them less resisting to dilating forces, is probably pre-requisite; the result of

long-continued inflammation. This was first pointed out by Dr. Stokes.

With regard to the immediate causes of this condition, they are not in all cases the same. Thus the obstruction of a bronchus by an enlarged bronchial gland, or by other causes preventing the exit of air and mucus, may bring about sufficient distension behind the obstruction to lead to permanent enlargement. But in the great majority of cases there is reason to believe that this dilatation depends on a prior morbid condition of the pulmonary parenchyma.

It is observed, in the case of dilated tubes, that the pulmonary tissue lying in immediate contact with them is usually, if not always, impermeable by air; that it is in a condition of fibrous atrophy, generally without marked induration. It was this circumstance which called forth the theory of bronchial dilatation by Dr. Corrigan*—to which he gave the name of "cirrhosis of the lung," from an apparent resemblance to the affection of the liver, known by that name. Dr. Corrigan conceived that a peculiar contractile fibrous tissue was formed in the interstices of the bronchi, which led to atrophy and obliteration of the pulmonary cells, and in some instances even to a contraction of the entire lung. Under these circumstances, two active forces, according to his views, are combined in producing bronchial dilatation. One is the pressure of the atmosphere from within the tubes in an outward direction to fill the vacuum caused by the diminution of the bulk of the surrounding parenchyma. The other is the traction exerted on the bronchial walls in consequence of the adventitious fibro-cellular deposit becoming attached to the longitudinal fibres of the tubes, so that dilatation in this way results from the shrinking of the surrounding tissue. Now, although we do not think that there is sufficient evidence that any

* Dublin Journal, May, 1858.

new or peculiar tissue is formed in this affection, yet there is no doubt that his observations in other respects are correct. We must at least accord to him the merit of being the first to notice and describe the morbid alteration and obliteration of the air-cells in connexion with dilated bronchi.

Following Laennec, subsequent writers have described three varieties of dilatation. One variety consists of a cylindrical and nearly uniform enlargement of a tube with more or less of its branches. A second variety consists in a spherical, sacculated, or pouch-like dilatation, occurring usually in the third or fourth sub-divisions, forming, in effect, a cavity which may attain the size in some cases, according to Rokitansky, of a hen's egg. Another variety consists in a series of globular dilatations along the course of a tube, the calibre of the intermediate portions retaining the normal size; the tube thus presenting an appearance not unlike a string of beads.

What, may we ask, is the true cause of dilatation of the bronchi? The explanations given by Laennec and others, which attribute it to violent coughing, to distension by accumulations of mucus, &c., do not seem to be entirely satisfactory, for the same reasons which have already been indicated as applying to emphysema. It seems, therefore, much more reasonable to ascribe these dilatations, as Dr. Corrigan has done, to the expansive forces of inspiration acting upon the bronchi of atrophied lung. But how shall we explain the occasional partial character of the lesion, the expansion of one portion of a tube into a sacculated globular enlargement, while portions of the same tube and adjoining ones retain their normal size?

Dr. Gairdner has, we think, given the most plausible solution of this question—that almost all the so-called bronchial dilatations, and all of those presenting the abrupt sacculated character to which we have just alluded, are in

fact the result of ulcerative excavations of the lung communicating with the bronchi.

As we have devoted sufficient space to the consideration of Dr. Gairdner's remarks on this point, when speaking of "bronchial abscesses," we need not discuss the subject farther.

The relations which exist between asthma and bronchitis demand a brief consideration.

The term asthma, like most terms in medicine, which have come down to us from antiquity, has been applied to a great many different affections. In popular language, every chronic shortness of breath or dyspnoea is still termed asthma, and this application of the term has had the sanction of many systematic writers, at least up to a comparatively recent period.

In this connexion, we have to do only with that variety of disordered respiration, which is denominated spasmodic asthma, and which is dependent upon causes acting through the nervous system upon the muscular structure of the bronchial tubes. Whether attacks of the disease are related or not to the existence of appreciable organic lesions, asthma is a complaint in which the spasmodic element prevails over all others.

What we term pure asthma frequently comes on without any appreciable exciting cause, without being related to any organic lesion susceptible of demonstration. But in the great majority of cases, we shall find that there are certain predisposing as well as exciting causes.

One of the most common predisposing causes is hereditary transmission—but a still more frequent predisposing influence is to be found in the inflammatory affections of the bronchial membrane—or perhaps it would be more correct to go still farther back, and say that it consisted in an extraordinary susceptibility to the impression of cold, rather

than in the bronchial inflammation which is the consequence of this susceptibility.

Under the head of the exciting causes, are to be comprehended all such as are known to bring about an asthmatic paroxysm, whether in the predisposed or not. Without denying the influence of many exciting causes which act upon the nervous system and thus produce an attack of asthma, such as fatigue, physical exhaustion, sudden or violent mental emotion, gastric irritation, &c., we must say that inflammatory affections of the bronchial membrane act most frequently as the stimulus, or as the source of irritation, to the production of the paroxysm.

Sir John Forbes says, "out of the immense majority of the cases met with, of asthma from other causes, nine-tenths are complicated with some form of catarrh, or at least with a morbid susceptibility of the bronchial membrane to be affected with cold."

According to statistics by Wunderlich*, true genuine asthma is extremely rare. It would be foreign to our purpose to enter into the pathology of this disease, which has lately been very ably discussed,† but we would remark that it seems impossible to avoid referring its most obvious symptoms to some kind of irregular action of the muscular apparatus of the air-tubes.

We have already spoken of the de-obstruent function of the bronchial tubes. It is now generally admitted that the muscular fibres of these tubes are undoubtedly perfectly passive as regards the respiratory act, and that their contractility is intended for the expulsion of obstructive mucus; that according as the admission of air to any part of the lung becomes less from obstruction, their detrusive action will be increased.

* See Appendix H.

† The Pathology of Asthma, by Hyde Salter, M.D. Brit. and For. Med. Chi. Review, July, 1858.

If now we apply these views to an explanation of the phenomena exhibited by asthma, particularly by that kind which is termed humoral, we shall be able to throw some light upon what is otherwise obscure.

The copious expectoration with which attacks of this kind are commonly terminated, and by which they are relieved, would seem to indicate that an undue accumulation of mucus had been taking place; while the absence of almost all catarrhal symptoms, in many cases, appears to show that this accumulation is directly connected with the spasmodic derangement which brings on the paroxysm. The connexion of these two phenomena is not difficult to understand; for if the removal of this mucus depends, in a healthy condition, upon the regular peristaltic contraction of the bronchial muscular fibres, it is very obvious that its accumulation must accompany any derangement of that action — and the paroxysm ceases when the normal action is restored. “The aggravated asthmatic paroxysm always occurs during sleep, when the energy of the nervous system is at the lowest, and the comparatively quiescent condition of the respiratory function favors the accumulation of mucus. It seems probable that the asthmatic paroxysm is attended with more or less of pulmonary collapse, the consequence of the accumulation in the bronchi, but I have not had an opportunity of direct observation on this point. It is certain, however, that this accumulation must seriously contribute to the production of the most distressing symptoms of the paroxysm.”*

Finally—however doubtful and difficult may be the pathology of this disease, we shall be safe in saying, that the catarrhal element plays its part, as we have before remarked, most frequently in its production; at least, it is the exciting cause of the asthmatic paroxysm in the great proportion of cases.

* On Bronchitis. Gairdner. L. and E. Monthly, 1851.

Does bronchitis give rise to pulmonary phthisis?

Perhaps no one opinion has ever been more generally admitted both by the profession and the public, than the direct relation of bronchitis to pulmonary consumption as cause and effect. Upon what does this opinion rest?

It is very certain, at the outset, that no affection so commonly appears to precede tuberculous phthisis as bronchial irritation. But this may be accounted for in two ways. The pulmonary mucous membrane of tuberculous subjects is undoubtedly very susceptible to the impressions of those causes which produce congestion and inflammation, such as atmospheric changes, &c. Then, again, tubercles often prove a source of bronchial irritation some time before their presence is indicated by other symptoms.

The opinion of Louis upon this point is well known. He says, in his work on Phthisis, that he has arrived at the following conclusions — “that phthisis is equally frequent in individuals liable to bronchitis, as in those where no such liability exists; it cannot therefore be considered as a consequence of the latter, no evident relation existing between them.”

Again — “Not only, then, is the influence of pneumonia, pleurisy and bronchitis in the development of phthisis not demonstrated, but our observations induce us to suppose its existence imaginary, or at least restricted within very narrow limits; from what has preceded, we think that we have proved that in one-twelfth part of our cases, pulmonary tubercles were developed independently of all inflammation, either of the substance of the lung, pleuræ or bronchia.”

“There is also a circumstance not less certain than those on which we have hitherto insisted, and which might indeed be substituted in their stead, viz.—that the bronchia are, in general, healthy in the vicinity of either unsoftened tubercles or masses of gray, semi-transparent matter; that the redness and thickening of those which communicate with tuberculous

excavations, seem the result of the constant passage of the contents of the latter, and that in cases fatal from some other affection, but with crude tubercles or gray granulations in the lungs, the bronchia are almost constantly healthy, both as to color and thickness.”*

“Perhaps in the history of phthisis no one opinion was more universally admitted than that bronchitis was amongst the most frequent and active causes of pulmonary tubercles; this cannot, however, be any longer supported, and its accuracy is rendered still more problematical by what has been advanced in the notes on ‘Diagnosis’ as to the situation of simple bronchitis at the *base of the lungs*. *Chronic* inflammation of the bronchial mucous membrane does not appear more influential. In eleven cases of dilated bronchia, where the general symptoms of phthisis had not been present, and the duration of the affection was from two to six years, the mucous membrane was intensely red, thickened and granulated, while tubercles existed only in three, and were neither numerous nor softened. It is not intended to deny that bronchitis may and does occasionally hasten the development of tubercles (acting like all other causes which tend to weaken the sum total of health), but that it has no *direct* specific influence.”†

Andral observes—“What ought never to be lost sight of, is this, that in order that inflammation of the mucous membranes of the air-passages shall be followed by the production of pulmonary tubercles, it is necessary to admit a predisposition. This being admitted, we can easily conceive how in one individual very slight bronchitis is sufficient to produce tubercles, whilst others do not become phthisical from the most severe and long-continued pulmonary catarrh.”‡

* Louis on Phthisis. Bowditch’s Edition.

† Bowditch. Appendix E. Louis on Phthisis.

‡ Clinique Médicale, t. ii., p. 32.

According to some statistics prepared with great impartiality and care by Dr. James Pollock, Physician to the London Hospital for Consumption, in relation to the effect of the season of the year upon the commencement of phthisis, and consequently in relation to the influence of bronchitis on the production of the disease, the following results were arrived at. The history of 487 cases of well-marked tubercle being satisfactorily obtained, it was found that

In the spring quarter — } there were 154 commenced.
 March, April, May, }

In the summer quarter — } there were 75 commenced.
 June, July, August, }

In the autumn quarter — } there were 141 commenced.
 Sept., Oct., November, }

In the winter quarter — } there were 117 commenced.
 Dec., Jan., February, }

According to this result, it will be seen that the spring and autumn originated by far the largest number of cases, then the winter quarter, and finally the summer. Now, the winter quarter, which ranks *third* in the list, is the period of the year at which most cases of bronchitis commence, when in fact the influences of the weather and its changes have most effect. The spring and autumn, however, seem to hold the pre-eminence, and the summer stands at the bottom of the list.

Therefore the commencement of phthisis at the period of the year when bronchitis is most commonly at its minimum, as shown by the above tables, is certainly opposed to the view that bronchitis leads to phthisis.

These observations, which were made with reference to English climate, are equally well adapted to our own.

Dr. James Clark remarks that repeated attacks of bronchial inflammation, or the long-continued application of mechanical irritants to the membrane of the bronchi, may

prove the exciting cause of tubercles, when the constitutional predisposition exists.

Dr. Wunderlich,* in his remarks on phthisis, says that frequent attacks of acute bronchial catarrh seem to predispose towards phthisis, or at all events to hasten the eruption of its symptoms; while, on the other hand, chronic bronchial catarrhs seem to keep off pulmonary tuberculosis.

"Where a real predisposition prevails, tubercles become developed in the lungs under a variety of circumstances. In some instances the tubercular development advances obviously under the exclusive influence of exciting predisposition—so slowly, and its ulterior stages follow so insensibly, that the mischief escapes ordinary observation until a very late period. For the most part, the disease is traceable to a catarrh, which after a first attack leaves perhaps but a slight cough behind, but on frequent repetition gradually and irretrievably lapses into confirmed phthisis. Generally speaking, chronic phthisis is wont to be interrupted by tolerably frequent breaks of seeming recovery, so that a limited number of tubercles may, under favorable circumstances, remain dormant for months, and even for an entire year, until an attack of catarrh or bronchitis, slight pleurisy or a peripneumony, operates upon the already diseased parts, so as to revive the quiescent diathesis, exciting it to increased productiveness, and thus hurrying on the disease uninterruptedly to its fatal issue."†

In an analysis of 136 cases of phthisis observed at the Royal Infirmary for Diseases of the Chest, by Dr. Leared (no case which was considered in the least doubtful being taken into consideration), in more than two-thirds of the whole number of cases a definite cause was assigned for the disorder. The statements were almost invariably made

* Handbuch der Pathologie und Therapic. Stuttgart.

† Hasse. Pathological Anatomy.

with great positiveness; 29 of the whole number assigning causes, attributed the onset of the disease to a "cold" or to repeated "colds," the cause of neither of the latter, however, being stated; while a particular cold has been itself traced to its source or connected with something else in 26 other cases. We have thus a total of 55 attributing their disease to cold or catarrh. Making therefore every allowance for the liability to confound with it the earlier stages of phthisis, and admitting that a fair proportion of the first named 29 cases were in reality involved in this error, it would perhaps seem probable that in this instance, as well as in others, there may be a shadow of reason upon which to found this popular notion. However, Dr. Leared agrees with the majority of authors, in the main. "The general fact seems to be, that in the predisposed habit phthisis is not uncommonly developed by the operation of causes producing symptoms recognized as 'cold.' In rejecting the explanation of the origin of the disease given by certain humorists of a by-gone age, we have, it appears to me, gone too far in the opposite direction, since catarrh by some is quite ignored as an exciting cause."

According to statistical researches by Dr. Briquet, at the Hopital Cochin, Paris, of 109 phthisical patients, a third were more subject to bronchitis than other persons, and were more sensible of cold.

A tabular view is given by Dr. Gellerstedt, of the amount of previous disease of all kinds in 119 patients who ultimately died of phthisis. From this it will be seen that 44 out of 119 had previous hæmoptysis, and 42 had bronchitis. Dr. G. considers bronchitis to be a frequent cause of the rapid development of phthisis in those already laboring under the tubercular diathesis, and he believes that acute affections are at all times peculiarly perilous to such constitutions.

	In 119 Cases.	Per cent.	In 191 Cases.	Per cent.	In 310 Cases.	Per cent.
Bronchitis	42	35.29	37	19.37	79	25.43
Hæmoptysis	44	36.97	84	43.97	128	41.29
Pneumonia	22	18.48	51	26.70	73	23.54
Pleurisy	17	14.28	28	14.65	45	14.51
Nervous Fevers	10	8.40	12	6.02	22	7.09
Ague	27	23.52	49	25.65	76	24.51
Dyspeptic symp.	10	8.40	32	6.02	22	7.09
Diarrh. & Dysen.	23	19.32	33	17.27	56	18.06

The figures in the first, third and fifth columns denote the number of individuals who had suffered from these antecedent maladies: first, of those 119 who died of phthisis, then among 191 persons affected with this disease; and lastly, among these two classes conjointly, while the per-centage of each affection is given in the second, fourth and sixth columns.

We have thus brought forward sufficient authority (more might easily be added, were it deemed necessary) to show that the popular notion that tubercular phthisis is the common and direct result of bronchitis, or, in common parlance, of a "cold," is not founded upon fact. Under the circumstances, it is not a little curious that such an idea should have prevailed so extensively, and become as it were a matter established beyond question.

In our opinion, the great mistake made by most writers on the etiology of phthisis, consists in the constant endeavor which they make to find out some special and uniform influence by which to originate the malady. For it must be borne in mind that the origin of phthisis is not local, but connected with the most deeply seated vital processes; that it is a constitutional affection with local developments, rather than a local disease with sympathetic disorder of the system. We are thus naturally drawn to the conclusion, that bronchitis is to be considered as a cause of phthisis, only when a predisposition exists.

Although great advances have been made at the present day in our knowledge and treatment of pulmonary con-

sumption, it undoubtedly stands at the head of the list of the causes of death. It would seem, therefore, as if the hereditary predisposition to the disease must be very strong amongst us as a nation, and that our best means of staying its ravages must depend upon the attention given to invigorating the constitution of the young. Much interest has been awakened, of late years, as regards the importance of manly sports and out-door exercise for our youth; still there is necessity for even greater attention to this point. We have especially to guard against the too long confinement of our children in the school-room, and the over-taxation of their brains at the expense of their physical wants.

In this way alone can we hope to overcome that predisposition which in so many cases, lying dormant, is ready to break forth whenever excited by the most trivial causes.

In the preceding pages, we have endeavored to point out the immediate and remote effects of bronchitis, as shown more particularly by the *pathological* states of the lung. We first directed attention to the effect of inflammation upon the lining membrane of the bronchi, and their secretions, and the consequent effects upon the auscultatory phenomena of the chest. We then spoke of death from apnœa, the result of sudden and abundant effusion of the inflammatory secretion, or of the plugging up of one or more of the principal bronchi. We proved that all the phenomena exhibited by the physical signs of bronchitis were in perfect accordance with the anatomical appearances, which we described.

Next, we considered the direct effects of the obstruction of the bronchi upon the adjacent pulmonary tissue, leading to that peculiar condition, collapse of the lung, a lesion which has but lately been properly understood, having been heretofore considered and described as a form of pneumonia. The history of this affection we discussed at some

length—commenting upon the light which a knowledge of it had thrown upon the pathological conditions of the lung, particularly in childhood.

We next considered the causes of this lesion—and whether obstruction of the bronchi, without some deficiency in the respiratory power, was sufficient to bring it about. We gave the views of several observers on this point, and the results of experiments on animals—and having discussed the relative effects of inspiration and expiration, in their power to get rid of bronchial obstructions, as well as the mechanical condition, conducing to the production of collapse, to be found in the air-tubes themselves, we arrived at the following conclusions:—

That the production of collapse of the lung is due—first, to the existence of mucus in the bronchi, which is the more liable to produce collapse in proportion as it is tenacious. Second, to weakness or inefficiency of the inspiratory power, however it may be caused. Third, to inability to cough or to expectorate, and thus remove the obstructing mucus.

Bronchitic collapse of the lung occurring under two different forms, we gave the anatomical appearances which they present, observing, also, that the disease offered the same characteristics in the adult as in the child.

The question of bronchial abscess next occupied us. We considered its pathology and relation to bronchitic collapse, and the views of several observers on this point.

The diagnostic symptoms of collapse having been given, we considered whether, this condition being once established, the lung could be restored to its normal condition—a consideration which led to the question of the function belonging to the muscular fibres of the air-tubes.

Does bronchitis give rise to true pneumonia, lobular as well as lobar? We presented the views of several authors on this point—as also the anatomical appearances of partial (lobular) pneumonia.

We next passed on to the secondary and more permanent lesions of the lung—the result, for the most part, of bronchitic collapse. We said that this pulmonary lesion led to atrophy of the lung—which we fully considered, giving the observations of Dr. Gairdner, and others, on this point, and on the pulmonary concretions which are not unfrequently found in the midst of atrophied lung.

Next in order, as secondary effects of bronchitis, we discussed the important subject of vesicular emphysema. Describing the nature of this lesion, we considered at some length the conflicting theories which have been offered to account for its development. We endeavored to show that the theory of Laennec and others, which would ascribe the origin of emphysema to forced *expiration*, could not be supported, reasoning on the mechanical incapability of the act, but that the experiment of M. Groux, upon himself, would seem to decide otherwise; so that we are forced to admit that vesicular emphysema *may* be produced by the expiratory act.

The *inspiratory* theory of Dr. Williams and others, we attempted to prove, approached the truth, but did not cover the entire ground. Reasoning from the fact that the inspiratory power of the chest is exactly limited by its capacity, it is obvious that the inspiratory force can no more distend the air-cells so as to produce emphysema, than it can do so in perfect health. Another condition is therefore necessary to the perfection of the theory, and this is to be found in partially diminished bulk, or, in other words, pulmonary collapse or permanent atrophy of some portion of the lung.

These observations are based not only upon what the anatomical appearances teach, but upon the peculiarities which are presented by the “emphysematous chest,” and the relation which it bears to pulmonary emphysema.

Certain pathological alterations of the bronchi, the contraction, obliteration, as well as the dilatation of these ves-

sels, as secondary results of bronchitis, were next attended to. The forms, causes and changes in the lung due to these conditions were spoken of.

The nature of asthma, and its relation to bronchitis, were discussed. Having again spoken of the de-obstruent action of the air-tubes, we said that attacks of asthma, especially that which is termed "Humoral," were undoubtedly owing in many cases to a spasmodic derangement of the muscular fibres of the bronchi, whereby a great accumulation of mucus took place. Connecting these two phenomena, it is obvious that if this removal of the mucus depends in a healthy condition upon the regular action of these fibres, its accumulation must accompany any derangement of that action.

In our remarks upon the relation of bronchitis to phthisis, we said that observation and experience have now conclusively shown that this affection is to be considered as a cause of phthisis *only when a predisposition exists*; that there was in reality very little or no foundation for the widely-spread opinion that bronchitis is a frequent and direct cause of phthisis.

We closed with some general observations upon the etiology and prophylaxis of the disease.

A P P E N D I X .

A—(Page 224.)

“There is another rhonchus, which may be called the dry mucous, because it is produced by a pellet of tough mucus obstructing a tube and yielding to the air only in successive jerks, which cause a ticking sound like that of a click-wheel. When the air is driven very fast, these click-sounds pass into a continuous note, and constitute the sonorous rhonchus. Sometimes, again, particularly in inspiration, the click-sound suddenly stops, the tough mucus being forced into a smaller tube, which it completely closes, and may not be dislodged again, but by dint of forcible coughing.”*

B.—(Page 226.)

CASES REPORTED BY ANDRAL.†

Chronic Bronchitis—Obstruction of a Bronchus by Mucus—Death from Asphyxia.

A mechanic, aged 53, entered the hospital of La Charité, for articular rheumatism. He had had besides, for nearly two months, an obstinate cough, with thick and tenacious expectoration. On percussion, the sounds of the chest were normal. On auscultation, the respiration was perfectly distinct throughout the whole left side, with some râles at the superior and middle portions of the right lung. There was no dyspnœa. Suddenly, one day, in the midst of a severe paroxysm of coughing, the patient was seized with a great difficulty in respiration. This was followed very soon by symptoms of asphyxia, livid countenance, cold extremities, small pulse. The sonorousness of the chest

* Dr. C. J. B. Williams. Diseases of the Chest.

† Clinique Médicale. Tome 3d.

had not altered. The respiration was puerile throughout the left side; behind, on the right side, there were mucous râles, but in front, from the clavicle to a little below the nipple, there was entire absence of all respiration, although the thorax was forcibly expanded.

We diagnosed the existence of pulmonary emphysema. The patient soon died.

Autopsy.—The viscera of the cranium and abdomen presented nothing abnormal. The heart normal. The lungs in part infiltrated, presented other portions which floated in water. Larynx and trachea healthy. Nothing as yet explained the absence of respiration at the superior part of the right lung, which had been recognized during life and had been referred to emphysema. But on incising the bronchi, we discovered, at the commencement of one of the principal bronchi, a mass of concrete mucus, which closed up the tube precisely like a cork. It was this bronchus which supplied the upper lobe of the lung.

Chronic Bronchitis—Obstruction of a Bronchus by Mucus—Dyspnoea and Death.

A coachman, 50 years old, had been a patient in La Charité several times for obstinate pulmonary catarrh, with slight dyspnoea and fusiform expectoration. Every time he went away relieved, but not cured. On both sides of the chest could be heard all the varieties of bronchial râles. In one spot, the column of air which penetrated the bronchi imitated the snoring of one in a deep sleep; in another spot it was like a dull and prolonged groan; in a third, a sound resembling that made by bellows; and in a fourth, the cooing of a turtle dove was exactly imitated. On the last occasion of his entering the hospital, his respiration was still tolerably free. One morning he was found in a state of unusual anxiety. In the middle of the night, after a violent paroxysm of cough, his breathing, he said, had suddenly become very much oppressed. It was discovered, on auscultation, that no air penetrated into the upper lobe of the right lung; yet that part sounded well on percussion—even louder than the corresponding part of the other side, which was morbidly dull. The difficulty of breathing increased, and the man soon died.

Autopsy.—Besides other marks of disease in the lungs, the primary bronchus leading to the upper lobe on the right side was closed up completely by tough mucus, and exhibited the appearance of a full cylinder. All the other organs were healthy.

C.—(Page 228.)

To advert a little more fully to the authors who have described collapse of the lung, as a state distinct from pneumonic consolidation.

Laennec seems to have described the diffused form of collapse only in connection with pleuritic effusion and compression. However, that he did not entirely overlook the lobular form is evident from his speaking of meeting with carnified portions, of the size of an almond, in the midst of very crepitant pulmonary tissue, and which he ascribes to “a slight inflammation in the first stage, the resolution of which, hastened by compression of the lung perhaps, has taken place in an irregular and imperfect manner.”*

In 1829, M. Louis described the condition of the lungs in a variety of cases of typhoid fever, which descriptions were republished in 1841, and the state of the lungs in fevers compared with that found in other diseases. The result of these inquiries was a description of collapse of the lung, as a condition altogether different from pneumonia. M. Louis, however, does not account for the origin of the affection.†

Dr. Alderson,‡ in a monograph on the “Pathology of Hooping Cough,” in 1830, pointed out the distinction between the lobular condensation observed in that affection and true hepatization of the lung.

In 1832,§ Prof. Jörg, of Leipzig, published an account of a morbid condition found in the bodies of newly born children, analogous to that considered as characteristic of lobular pneumonia. To this condition he gave the name of atelektasis. Jörg was the first to point out the effects of inflation in this form of pulmonary disease, as contra-distinguished from pneumonia.

MM. Barthez and Rilliet, in 1838, published an article on infantile pneumonia. While they accurately described the appearances of carnified lung, they failed to see its true condition, although they came near the truth, as will be seen by the following remark. “Bronchitis, especially of the smaller bronchi, is a frequent concomitant of the pneumonia of children, *especially the lobular form.*”

In 1844, were published the very important researches of MM. Bailly and Legendre, which fully demonstrated the identity of the lobular pneumonia of children with the atelektasis of Jörg.

Since this period, this pulmonary lesion has been recognized and commented upon by numerous writers—among whom we may mention Hasse, Dr. West, Dr. Fuchs, of Leipsic, and Dr W. T. Gairdner, of Edinburgh, as the latest authorities.

* De l'Auscultation Médiate. Vol. I., ch. v.

† Med. Chi. Transact.

‡ Sur la Fièvre Typhoïde.

§ De Pulm. Vit. Org. Leipsic, 1832.

D.—(Page 241.)

The statistical returns of the "Salpêtrière," at Paris, furnish, as has been shown by M. Valleix, in a paper on this subject, ample proof of the frequent occurrence of what has hitherto been considered as "pneumonia" in the aged, but which more accurate observation has now undoubtedly established to consist of collapse of the lung, and its results.

M. Piorry, in his first researches into this affection, as it occurred in this very hospital, the Salpêtrière, was much struck with the extreme frequency of this "pneumonia," both as a cause of death, and as a curable disease, accompanying almost all the diseases of old men. These researches satisfied him that this affection was a peculiar disease, distinctly to be traced by auscultation and percussion during life. To this condition, M. Piorry has applied the term congestion (engorgement), a condition, according to him, having a great tendency to pass into inflammation, but not necessarily in itself inflammatory. Accordingly, he advises general bleeding—the consequences of which practice (if the "pneumonia" or collapse of the lung is due in these cases, as it undoubtedly is, to general debility), may be guessed at by the data given by MM. Hourmann and Dechambre. They state that pneumonia was by far the most frequently fatal disease in Salpêtrière, and that its frequency amongst those affected primarily with other diseases and recovering, was also very great; but that the immense majority (37 to 53) among those who recovered, were either latent affections, or at least presented no symptoms of acute pneumonia, but only of "congestion."*

E.—(Page 246.)

Cases illustrative of Collapse of the Lung—as a result of Bronchitis and Bronchial Obstructions.

CASE I.

Mary A——, aged 10 months. Weak and feeble constitution. Parents both dead. About four weeks ago was suddenly seized with bronchitic symptoms, which have continued up to this time. Has lost much flesh. On examination, find chest "pigeon-breasted." Respiration is almost entirely abdominal; the ribs being very yielding, are drawn in by the diaphragm. Cough not very urgent.

A few days before death, breathing became much oppressed, and cough very severe. The dyspnoea increased rapidly, the cough became

* Archives Générales de Médecine. Tome xii.

less frequent. On auscultation, large mucous râles could be heard. Five or six hours before death, the lips grew livid, respiration 85 in a minute, abdominal muscles acted violently, but chest was scarcely at all expanded.

Autopsy.—No tuberculous deposit in any organ. Large portions of both lungs presented the undilated condition, which disappeared on inflation. Considerable mucus in bronchi. Right side of heart greatly distended with coagulated blood.

In this case collapse took place not only from bronchial obstruction, but also from imperfect respiration, the result of great debility.

CASE II.

Catherine K——, aged 2 years. Has always been in good health, until two weeks ago, when she was seized with symptoms of acute bronchitis with suffocative cough, coming on in paroxysms—and sometimes followed by the rejection of a muco-purulent fluid. Has lost flesh and strength. Some stimulating expectorants were given, with some temporary benefit. Symptoms continued very much the same, until very suddenly coldness, faintness, and exceedingly labored respiration came on, under which symptoms she died in the course of twenty-four hours.

Autopsy.—A few recent adhesions were found on both sides of chest. The trachea contained a large quantity of muco-purulent matter, and the bronchial tubes were also filled with it. Some congestion of the lungs posteriorly. The upper and posterior part of the upper lobe of left lung, nearly the whole of the middle lobe, and the lower posterior edge of the lower lobe, were dark, solid, and non-crepitant. The same condition was found in the whole lower third of the upper lobe of the right lung. On inflation, most of these portions were restored to a natural condition, although some patches remained a little less dilated than the others. The other organs were comparatively healthy. Collapse of the lung, in this case, was the result of the sudden supervention of the muco-purulent secretion, which the organs were unable to throw off.

CASE III.

Adelaide K——, aged 5 years. Died with marked symptoms of hydrocephalus. The condition of the lungs was not noted during life. At the autopsy, besides certain lesions discovered in the brain and its appendages, the lungs presented the following appearances. The root of both organs was occupied by enlarged bronchial glands, infiltrated with crude yellow tubercle. The left lung was healthy, with the exception of partial collapse of some parts of its tissue. The enlarged bronchial glands in the right lung pressed upon some of the bronchi going

to the lower lobe, so as to distinctly diminish their calibre, as could be ascertained by passing a probe. In the upper margin of the lower lobe, was a somewhat rounded portion of condensed lung, of the size of a walnut, which, on being incised, showed a cluster of yellow tubercles. The anterior extremity of the lower lobe was completely collapsed, and evidently sunk below the rest of the lung. On inflating the right lung, it was found that the collapsed portions could be restored to their natural condition by using considerable force.

In this case, besides there being some general bronchitis, the collapsed portions were owing to the encroachments upon the bronchi by the enlarged bronchial glands.

CASE IV.

George S—, aged 19. Had been long affected with necrosis of the tibia, and also with disease of liver. Finally died, worn out and very much emaciated.

There had been no pulmonary symptoms to attract notice.

Autopsy.—The lungs were generally healthy in appearance. But on closer examination, there were found two or three places, of about an inch in diameter, which were plainly circumscribed by abrupt margins, and which crepitated imperfectly. The bronchi leading to these portions yielded on pressure a thick, tough, gelatinous substance, which had the ordinary appearance of mucus under the microscope.

In this case the collapse was evidently connected with the bronchial obstruction. For the portions affected and the bronchi leading to them could be perfectly isolated, and, moreover, there was no trace of any inflammatory action in any part of the pulmonary tissue.

CASE V.

Catherine C—, aged 30. Died of dysentery. No particular notes of case during life.

Autopsy.—Body much emaciated. On opening thorax, both pleural cavities contained a small quantity of fluid, with some adherent soft lymph. The lungs presented marked variations in density. The anterior edges were somewhat emphysematous, but between the parts thus affected, could be felt numerous condensed portions, which when on the surface had a collapsed appearance. Condensed portions were also found at posterior part of lungs.

On cutting into the pulmonary tissue, throughout the condensed portions there were found numerous small yellow spots resembling softened tubercles. These, when examined closely, were found to be bronchial tubes, or small cavities filled with pus. Except at these points, the

condensed tissue yielded only a little sero-sanguinolent fluid. Heart normal. Several dysenteric ulcers were found in the intestine.

This case presented quite extensive collapse of the lung, accompanied with bronchial abscesses, as also with emphysema.

CASE VI.

Charles P——, aged 9. On visit was found suffering under an attack of measles. On percussion, chest clear, but numerous mucous râles heard on auscultation. Four days after, chest symptoms much aggravated, with a good deal of fever. Crepitating râles heard all over chest, but no dulness on percussion. A day or two after this last visit, there was much dyspnœa, quick and feeble pulse, dulness over both sides of chest, behind. Died.

Autopsy.—The lungs collapsed imperfectly, on opening the thorax; at their anterior edges they were emphysematous, with some irregularities of surface. In the midst of the emphysematous portions, condensed lobules could be felt in various parts. On cutting into the lower lobes, there were found several yellowish deposits, irregularly formed, the largest of the size of a small nut, perforated in many places by bronchial tubes, and not so distinctly circumscribed as tubercles.

F.—(Page 260.)

Dr. Jenner lately read a paper before the Royal Medical and Chirurgical Society, the object of which was to show, in opposition to the views advanced by Dr. Gairdner, and others, that the force called into play by violent expiratory effort is by far the most common and efficient cause of acute vesicular emphysema, and of the chronic form which accompanies chronic bronchitis. Dr. J. denies that during expiration every part of the lung is equally supported, and equally compressed, and he affirms that the apex, the anterior margin, the margin of the base, and some parts of the root of the lung, are at once imperfectly supported, and comparatively little compressed only during expiration. The thoracic parietes covering those parts of the lung which are the least supported and compressed, are those which are seen, when a person makes a powerful expiratory effort with a closed or imperfectly open glottis, as in whooping cough, croup and hypertrophous emphysema, to be driven outwards. These same parts are the most common seats of emphysema. Three cases are detailed by Dr. Jenner in support of his position.

Dr. Edward Smith remarked that the author's theory was not so opposed to that ordinarily received as the antithesis of the terms in-

spiratory and expiratory, and the author's denunciation of the inspiratory theory, seemed to imply; since on both theories, the disease is produced by the forcible entrance of air into the cells. The disease is not produced by or during expiration; since it is essential, on the author's theory, that the glottis should be closed; and hence, when expiration is permitted, the production of the disease cannot occur. The occurrence of the disease with cough, that is, under the conditions mentioned by the author, has long been admitted by the advocates of the inspiratory theory; and since the essential act in the induction of the disease is the introduction of air into the cells, he would regard the author's theory simply as a modification of the inspiratory, notwithstanding that the power employed is that which, with the glottis open, would be expiratory. The author's theory is one of compression and dislocation of the contained air, and not of expiration.

G.—(Page 271.)

Chronic Bronchitis—Emphysema—Asthma.

CASE I.

Samuel J——, aged 22. A hearty, robust sailor—cook to a vessel.

He says that three months before our visit, when at sea, he first began to suffer from cough, attended with expectoration and shortness of breath, which symptoms have continued to increase up to the present time. On examination, the thorax anteriorly is unusually arched from above downwards. On percussion, there is everywhere a loud resonance, especially in front. On auscultation, the expiration is much prolonged, and accompanied by sibilant and sonorous râles, louder and more general on the right side. Cough is frequent and prolonged, with copious frothy mucous expectoration; great dyspnœa on any exertion, and occasionally coming on in paroxysms without any obvious cause. Sometimes vomits after a severe fit of coughing.

In addition to the dry râles heard at our first examination, copious coarse moist râles soon appeared posteriorly and inferiorly on both sides of chest. These continued pretty constant, the dry râles undergoing several variations both in intensity and in situation. About a month after we first saw patient, he was attacked with severe and long paroxysms of dyspnœa. These attacks generally terminated by violent cough, expectoration and vomiting, after which he always felt relieved. After exposure to cold, a short period after the asthmatic attacks commenced, he was seized with sore throat, followed by laryngitis and partial aphonia which greatly aggravated the asthma. These symptoms

were much relieved by the application of nitrate of silver to the larynx.

When we last saw him, the chest was still unusually resonant on percussion, and many of the auscultatory signs were still present.

CASE II.

Jane D——, aged 20. Servant.

About fourteen months ago, after exposure to damp and cold, patient was seized with a severe pain in the chest, accompanied with cough. The pain in the chest soon disappeared, but the cough remained and became much more severe—attended with considerable dyspnœa.

On percussion, resonance is very loud both anteriorly and posteriorly. On auscultation, expiration is everywhere prolonged. Sibilant and sonorous râles accompany inspiration and expiration on both sides anteriorly and posteriorly. Vocal resonance everywhere diminished. Cough and dyspnœa are paroxysmal. Expectoration is moderate, and consists of frothy fluid mixed with tough gelatinous mucus. Sounds of heart healthy. Bowels generally constipated. Some appetite.

After treatment for a few days, the symptoms generally improved, but shortly after this, the dyspnœa again became distressing, and she was nightly attacked with asthmatic paroxysms. Anodyne draughts generally afforded relief. As the summer approached, the fits became less frequent, gradually diminishing in severity and duration.

The above was a case of chronic bronchitis, with emphysema, and severe paroxysms of asthma.

H.—(Page 272.)

According to statistics by Dr. Wunderlich, genuine asthma is an extremely rare disease. Out of 10,000 clinical patients, only three, according to him, presented at all the character of asthma. He says, "The pathological condition of asthma is very unsatisfactory and imperfect. Among the causes in connection with the respiratory organs which are enumerated by writers, are congestion, extensive tubercular and cancerous deposits, emphysema, œdema, chronic bronchitis, catarrh, affections of the glottis, &c." These are often complications, but he doubts whether they ever give rise to asthma.

ON HEMOPTYSIS AS A SYMPTOM.

By JOHN WARE, M.D.

OF BOSTON.

READ AT THE ANNUAL MEETING OF THE SOCIETY, MAY 29, 1859.

HEMOPTYSIS AS A SYMPTOM.

It will be my object, in the paper which I lay before the Society, to contribute something towards the history of Hemoptysis and its value as a *Symptom*. We are often at a loss in practice, when particular symptoms present themselves, for materials that may enable us to judge of their precise import; not only what disease they indicate, but also what weight we are to attach to them in regard to the tendencies and danger of the case in which they appear. This is certainly so with respect to Hemoptysis; and although I cannot expect to come to results which will remove all uncertainty, yet I may hope to furnish facts, which will at least aid in the formation of a correct judgment.

The most exact and valuable observations upon this symptom have been almost exclusively made upon the subjects met with in hospitals and other public charitable institutions. Now these subjects are to a considerable extent different from those which fall under our notice in private practice. It will not be surprising if the results derived from the examination of the one class differ in many points from those derived from the examination of the other. If such a difference exist, it is of importance to determine it, since we may be otherwise led to a false estimate of the value we are to attach to the symptom when it appears.

Observations made in private practice will be less exact and full in their details than those made in hospitals, and

especially less full in a pathological point of view; but, on the other hand, they extend over a greater portion of a patient's history, and especially they may more frequently include an account of his subsequent condition and ultimate fate. They may also throw more light upon the influence of treatment, particularly of that part of treatment which does not consist in the application of strictly medical measures. In this point of view they may have, if I am not mistaken, no inconsiderable value, although of a different kind from that which belongs to observations made in hospitals.*

It is not my intention to enter, except incidentally, into the history or pathology of those diseases in which hemoptysis appears. I shall consider them only so far as they bear a relation to this particular symptom, intending to give, not the account of a disease, but only the account of this symptom in relation to disease in general. With this purpose I have collected and compared all those cases that have occurred under my observation since the year 1819, in which it has been noticed. The whole number is 386. The records of these are many of them extremely imperfect,

* The statements of M. Louis, in his *Treatise on Phthisis*, would lead us to consider hemoptysis as a much graver symptom than it is usually regarded. During three years he made inquiry of all patients submitted to his observation, whether they had ever spit blood. Throwing out of view cases of phthisis, he received a negative answer, except when there had been external injury of the chest or a sudden suppression of the catamenia. His inference is that the occurrence of hemoptysis, whatever be the period of its appearance, indicates with great probability the presence of some tubercles in the lungs—“indique, d’une manière infiniment probable, quelle que soit l’époque de son apparition, la présence de quelques tubercles dans les poulmons.” It will appear hereafter that this view is not confirmed by the result of the present inquiry. It is by no means improbable that this discrepancy may be at least partly explained by the different character of the subjects that would fall into the hands of a man of M. Louis’s position, as compared with those coming under the observation of a physician engaged chiefly in a common family practice.

and in some there was merely noted the month of attack, the sex, and perhaps the age of the patient. Care, however, has been taken to use each case, when an absolute matter of fact is concerned, only so far as it contains details relative to that fact. Still, as to matters of opinion merely, such as are gradually formed as the results of experience, I shall not hesitate to express them, whether supported by accurate statistical examination or not, unless distinctly contradicted by such examination. As to the value of opinions thus formed, every individual must be his own judge. I must be permitted, however, to express my own conviction, that there are many points in the history and treatment of disease, and more especially in the history and treatment of symptoms, to which a numerical analysis is not applicable, and yet, with regard to which we may arrive at a close approach to the truth by careful and continued observation.

Some of these cases have been seen only in consultation with other physicians; and some only in office consultation. Of these, the history is of course more or less incomplete. The larger proportion, however, occurred in the course of ordinary practice. In these there has been very frequently an opportunity to learn something of the condition of the patient, both before and after the attack; its termination in phthisis, if this were the disease in which it terminated, as well as the character and duration of the phthisis; and, if it had not this termination, the subsequent history of the patient either to his death by some other disease, or as to his condition at the present time.

I have been careful to exclude from this inquiry all those cases in which small quantities of blood appear as part of the expectoration of ordinary confirmed phthisis. In this disease, in its advanced stages, blood very generally appears sooner or later—at least a few times, either merely streaking or tinging the sputa, or else separately—from the amount of a few drops to one or two drachms. These discharges

are obviously of a very different nature from the hemoptysis which occurs in the early stages, and no doubt proceed from the walls of tubercular, just as blood is often discharged from any other purulent cavities.

Omitting these, then, altogether, the cases that are included in this inquiry are—

I. Those in which hemoptysis has occurred as the *first indication of disease* in persons previously in their usual health, or at least who have before exhibited no marked pulmonary symptoms.

II. Those in which it has occurred at any period in the *forming stage of phthisis*, i. e., where there was cough, fever and other alarming symptoms, but no evidence of softening, or purulent expectoration.

III. Those in which it has occurred *at any subsequent period of phthisis* to any such considerable amount as to demand particular attention from its quantity.

IV. Those in which it has occurred in *the later stages of phthisis*, either as the immediate cause of death, or as accompanying the close of a case in such a manner as to constitute a prominent symptom.

V. All those in which it has occurred in connexion with *other diseases*; as pneumonitis, disease of heart, asthma or bronchitis.

I have not omitted, under the two first divisions, any cases on account of the apparently trivial quantity of the discharge, or of some uncertainty as to its source, for the reason that there are very many instances where the amount of blood is very small, and its origin equivocal, and yet it proves the precursor or indication of tubercular disease.

Incidentally to the examination of the more important circumstances concerning hemoptysis, it appeared worth the while to determine certain points of some, though of minor interest, such as the months during which it most frequently occurs, and the tendency to it at different ages and in the two sexes.

The month in which the first attack of bleeding took place was ascertained with tolerable certainty in 355 cases. They were distributed in the following manner:—

January,	34
February,	23
March,	38—95
April,	35
May,	28
June,	18—81
July,	26
August,	25
September,	28—79 \times 81 = 160 in the spring and summer.
October,	35
November,	39
December,	26—100 \times 95 = 195 in the autumn and winter.

Or, arranging the months according to the usual division of the seasons, we have 83 in winter—101 in spring—69 in summer and 102 in autumn; or 185 in winter and autumn, and 170 in spring and summer.

Both of these methods of arrangement afford a decided preponderance of cases in the colder portions of the year, and especially a notable diminution in the month of June, as compared with any other. In another view the same fact is observable. The four months of warm weather, June, July, August and September, give an aggregate of 97 cases—while the next four, October, November, December and January, give 134; and the succeeding four, February, March, April and May, give 124; an average of 129 for the eight colder months;—an excess of 32 cases, or about 33 per cent. This difference can hardly have been accidental.

The arrangement according to the usual division of the seasons also indicates one fact worthy of note as a material for further inquiry, viz., that the quarters in which the largest number is recorded are what may be called the transition seasons—i.e., 101 in spring, and 102 in autumn; the small-

est in the equal seasons—i. e., 83 in winter, and 69 in summer.

The age was ascertained exactly, in 264 cases, and estimated in 53 others. In the following table both of these numbers are included, since, as the periods of division are from 5 to 10 years, the probability of any material error is very small.

	Male.	Female.	Total.
Under 15 years,	1	3	4
From 15 to 20	12	27	39
“ 20 “ 25	31	32	63
“ 25 “ 30	36	40	76
“ 30 “ 35	31	12	43
“ 35 “ 40	18	16	34
“ 40 “ 50	15	15	30
“ 50 “ 60	5	13	18
“ 60 “ 70	1	4	5
Above 70	3	2	5
	<hr/> 153	<hr/> 164	<hr/> 317

The most noticeable features in this table are, first, the greater tendency which it exhibits to hemoptysis in females than males before the age of 20—13 to 30; the very near equality of the next ten years—67 to 72; and the excess on the part of males, from 30 to 40—49 to 28. From 40 to 50 the number is equal—but from 50 to 60 the preponderance is again very large on the side of the female—5 to 13. Whether this circumstance has any connexion with a disturbance in the balance of the circulation at the two periods during which there is an excess in the number of females, connected with the establishment, and cessation of the function of the uterus, is an interesting question. Some facts, to be adverted to farther on, on the connexion between the occurrence of hemoptysis and the state of the catamenia, will be found to have some bearing upon it.

The next observable point is, that the whole number of cases increases progressively from 20 to 30 years, and con-

sequently that the number of cases relative to the number of persons living at these ages is greater than before 20. Even after this period, the number of cases is at least as large in proportion to the number of persons living, as at any earlier one.

The numbers of the different sexes in this statement were 153 males to 164 females, but the sex was also noted in 65 other cases, where the age was not noted; of which 42 were males and 23 females, making in the whole 384; of which, therereof, 195 were males and 189 females. This result presents a slight variation from the first statement. The cause of this difference is to be found probably in the circumstance, that in the latter series the patients were probably those making only a few transient calls for advice; and of such cases, the males usually constitute the larger part.

Taking the whole of life, then, no very probable deduction can be made as to any greater tendency to hemoptysis in one sex than in the other. So far as the cases under consideration are to be relied upon, it is about equal.

The history of a part of the cases was recorded in sufficient detail to afford materials for some deductions with regard to their character, progress, event and treatment. The number of these was 329.

I shall endeavor to classify them in such a manner as best to illustrate the relation of the symptom under consideration to these particulars.

1. The first class contains those in which hemoptysis occurred as the first symptom, or in the early stage of cases that went on steadily to their termination in phthisis precisely as takes place in those which never present this symptom. In these the hemoptysis is apt to be confined to the early part of the disease; and I am not aware that bloody sputa are particularly liable to occur in their advanced periods. I include here not merely those which died under

my immediate observation, but also those seen in their advanced stages, where the condition of the patient rendered a speedy fatal event absolutely certain. Of these there were 52 cases.

I also place under this class patients seen only in the earlier stages, in which the symptoms and the physical signs were such as to render a course and termination like those of the above cases, all but certain. Of these there were 39. The whole number is 91.

2. Under the second class are placed those cases in which hemoptysis was preceded, accompanied, or followed, by symptoms indicative of pulmonary consumption, but which did not advance like those above described, steadily, or with partial alleviation only, to their termination. They exhibited very distinct marks of phthisis; their true character admitted no doubt; but their course was slow; it was not always even progressive. They had periods of remarkable relief, and sometimes even so retrograde a movement as to promise recovery. The fatal termination occurred at various periods, from two years to forty.

Under this division are also included cases in which opportunity was not afforded to witness personally their course, but where a sufficient knowledge was obtained of their character and history to justify their being regarded as of the same description. There were 43 in each of these subdivisions, or 86 in all. It will be convenient to designate the whole of this class as cases of *Protracted Phthisis*.

3. In the cases of this class, after the subsidence of the attack, the patient seemed entirely to recover, regained and continued to enjoy his usual health; but at some period, more or less remote, hemoptysis recurred and he died of phthisis; or else, dying of some other disease, tubercles were found in the lungs. Of these, there were six cases—three occurring under direct observation, and three others of the

nature of which there was satisfactory evidence. In one of them the interval was 37 years.

Probably had we more frequent opportunities of examining the bodies of those who have once had hemorrhage and after recovery have afterwards died of other diseases, we might find this evidence of the nature of the original attack in a greater number of instances.

4. In these cases, 62 in number, recovery took place as in those just described; but there was no recurrence of the symptom, or, if it presented itself a second time, it subsided, leaving the patient apparently well. These patients are either known to be now living in ordinary health, or to have died of other diseases, having no special connexion with the attack of hemoptysis or with the existence of tubercles. The length of time during which this immunity has continued, varies from two to thirty-seven years.

Besides these, there were 52 cases where a similar complete recovery took place, and where, so far as is known, there has been no return of disease. Still, as their entire history to the present time has not been followed, it is not improbable that in some there has been a recurrence, and their cases would consequently require to be arranged under one of the preceding classes. For the purpose, however, of our present inquiry,—where we cannot expect perfectly certain results, but are obliged to content ourselves with those which are approximative,—they are suffered to appear in this place. The whole number in this class, therefore, amounts to 114.

5. Under this division are included those cases in which hemoptysis was the predominant symptom at their fatal termination, and this, whether it had occurred in a previous stage of the disease or not. Of these there were 14, but the mode of death as connected with this symptom presented considerable differences. Thus:—

a. In 4 cases death was the immediate consequence of the bleeding, taking place either by suffocation or by syncope in the last stage of phthisis.

b. In 7 cases the attack of hemorrhage occurred at an advanced stage of phthisis, but when there was no special reason to expect a speedy termination in the common course of things. Death did not appear to depend upon the simple loss of blood, but upon those conditions of the lungs which are generally designated by the terms congestion of the lungs and pulmonary apoplexy.

c. Three other cases occurred in persons in whom there was no suspicion of tubercular disease, or at least no progressive stage of it, the symptoms and mode of death resembling those in the group of cases marked *b*.

The first four cases are therefore the only ones in which death took place directly from hemorrhage.*

6. In 15 cases where hemoptysis had occurred, death took place at no very long period afterward from some other disease. In these there was either no reason to suspect tubercular disease, or, if it existed, death took place from causes quite independent of its influence; in most of them, from disease of the heart.

* "Hemoptysis," says Dr. Walsh, "may kill *directly* or *indirectly*. My series of 131 cases furnishes but two examples of such mode of death. In one, death was direct, but from asphyxia, not loss of blood; the trachea and bronchi, as far as traceable, were plugged with coagula. In the other, death occurred from exhaustion, five days after the hemorrhage. In these and a few other cases which have fallen under my observation, the patients have invariably been males; in this point of view, and in some others, hemoptysis is a more serious event in men than in women." Of the 4 cases above, marked *a*, 2 were males and 2 females; of those marked *b*, 4 were males and 3 females; of those marked *c*, 1 was a male and 2 females—giving, in the aggregate, an equal number for both sexes.

7. Three cases of hemoptysis occurred in confirmed asthmatic patients, in neither of which were there indications of the existence of tubercles.*

The following table exhibits these results in a more compact and intelligible form.

I.—Deaths, with symptoms and course of common phthisis, }	Ascertained, 52 Probable, 39——	91
II.—Deaths, with phthisis, pro- tracted, }	Ascertained, 43 Probable, 43——	86
III.—Death from phthisis or tubercles, after interval of health, }	Ascertained, 3 Probable, 3——	6
IV.—Cases of what may be called recovery, }	Ascertained, 62 Probable, 52——	114
V.—Deaths, where hem- orrhage the promi- nent symptom, }	a. Directly from loss of blood, 4 b. with h. in course of phthisis, 7 c. with h. without phthisis, or not in the progress of it, 3——	14
VI.—Deaths occurring from other causes, }	Diseases of heart, &c., 15——	15
VII.—Hemoptysis in course of asthma, }	3——	3
	<hr/> 329	<hr/> 329

With regard to this arrangement, it should be observed that, although much pains has been taken to make it strictly accurate, yet from the mode in which cases are observed in private practice, and the difficulties which lie in the way of recording them satisfactorily, there must be many deviations from perfect accuracy. The errors from this source will

* A few cases occurred in which hemoptysis presented itself as one of the first symptoms of a pneumonitis, which afterward went through with its ordinary course. In some other cases beginning in this way, the patients became phthisical. Hemoptysis has also made its appearance to a small extent in the subsequent stages of pneumonitis. The number of these, however, has been so small, that a separate consideration of them did not seem called for.

probably, however, in the long series of years embraced, nearly balance each other, so that the results arrived at, will not be very far from the truth.

A few further remarks are necessary with regard to some of these classes. Those cases falling under the *first*, as has been stated, did not differ, as to their general features and courses, from ordinary average cases of regularly *Progressive Phthisis*. The amount of blood spit up was usually in small quantity, and, as a marked symptom, was confined to the incipient stages.

Those of the *second* class, or of *Protracted Phthisis*, constitute the most interesting, and, in many respects, the most important series of cases. Among them are included all those in which life was extended more than two years from the first decided mark of disease, whether this were hemoptysis or not. The quantity of blood discharged was usually larger than in common phthisis, and sometimes very large. In some patients it was repeated at longer or shorter intervals, more or less regularly; in others it was confined to the early stages. It was quite common for hemorrhage to be followed by a decided alleviation of symptoms, sometimes continuing for years, yet without their entire removal. Still there was occasionally so great an improvement as to lead the subject, and even the physician, to entertain sanguine hopes of recovery.

Patients of this description were commonly older than those of the first class; the average ages at death being 27 for the first class and 30 for the second. The oldest of the first class was 70; and of the second, 72.

The proportion of "protracted phthisis" in this statement, is probably somewhat greater than would be actually found to occur in any community, were all the cases occurring in it observed only once, and by but a single practitioner. In common "progressive phthisis," the character and destiny of the case is so decided, that the patient usually remains at

home and under the care of a single attendant. It is otherwise with the patient laboring under the protracted form. He is apt to go from place to place, and from physician to physician; hence if all practitioners were to put on record all their cases of disease, whilst the short cases would appear usually only once or twice in the combined record, the long ones would appear several times. It is obvious, therefore, that the numbers here given afford no means for exactly determining the relative frequency of these two classes of cases. I know of no way of correcting this error. Yet the statement has some value, even in this respect. It shows that such cases are at least of common occurrence; and still more, it illustrates their character and leads to important considerations relative to their treatment.*

The *third* class is distinguished by a long interval of health between the attack of hemoptysis and the death of the patient, who, however, ultimately, either before or after death, gives evidence of tubercular disease. A case of this kind is distinguished from one of protracted phthisis, however long in duration, by the consideration that, in the latter, marks of the disease continue present and there is a definite, though very unequal and irregular progress, whilst in the former this is not the case.

The conclusion that the cases of the *fourth* class are cases of recovery, is to be received only with much qualification. The fact of the quiescent state in which a patient, who has had hemoptysis, may remain for many years—as shown by the existence of such cases as those in the third class—and

* It would be a subject of much interest to inquire to what extent similar cases of protracted disease occur among cases of phthisis not distinguished by the presence of hemorrhage. In the absence of any means of exactly determining this point, I would merely state the strong impression I have, founded merely, however, on recollection, that they are comparatively rare.

tubercles become afterward developed, renders it extremely probable that in many of these persons, recorded as recovered, the same state of things did actually exist. This cannot be known except by the event. With our present knowledge, therefore, there is a propriety as well as convenience in throwing them together under this denomination.

Of the 62 cases of this class in which recovery is known to have taken place, or the patient to have died of some other disease, in 53 the precise interval was noted at which they were known to be living, or at which they had died after the occurrence of hemoptysis. Of the remaining 9, although the fact was satisfactorily known, no record remains of the precise period.

In 1 the interval was between 35 and 40 years.

3	"	"	"	"	30	35
6	"	"	"	"	25	30
14	"	"	"	"	20	25
7	"	"	"	"	15	20
10	"	"	"	"	10	15
10	"	"	"	"	5	10
2	"	"	"		less than 5	

53

From the examination of the *fifth* class, we learn how small is the immediate danger of death in ordinary cases of hemoptysis. Of the whole number of deaths from phthisis, but 4 took place directly from the sudden discharge of blood. When it is recollected that the cases here examined include but a certain proportion of the whole number of consumptive patients, while it includes all who die in this particular way, we may judge how small is the chance in any individual case that this mode of death, often so fearfully apprehended by the patient, and so appalling to his friends when it occurs, will present itself. If we add the 7 cases in which hemorrhage attended the fatal event, though not the sole cause of death, the proportion still is not large, when we take

into view the same consideration, that, so far as any given number of deaths in a community is concerned, this bears properly a relation to the whole number of those taking place from phthisis, and not merely to those in which hemoptysis has appeared as a symptom. But a fact of more important bearing on the apprehensions of patients is, that no instance of death is recorded as being certainly the result of an attack of hemorrhage in the early stages of tubercular disease. Out of the whole number of cases included in our examination, 386, only 3 are recorded as having proved fatal on an early attack—or but 1 in about 128. Even if we were to include all the cases of death from early hemorrhage in our calculation, the proportion would stand but as 4 to 208, or 1 in 52. But these were not cases of fixed phthisis, nor is it certain that they were tubercular.

Of the *sixth* and *seventh* classes I have no further remark to make, except that in the sixth I have included those cases in which the subsequent death took place at no long interval and from causes having probably some relation to the hemorrhage, as distinguished from those of the *fourth* class, noted as having recovered, where the death occurred after a considerable length of time and from causes quite distinct from those of the original attack.

Very little light has been thrown upon the causes to which hemoptysis is to be attributed, by this examination. The presence of tubercles was no doubt the remote cause in a large proportion of the cases—190 out of 329—and probably in many others. But a more immediate inquiry is, why this specific symptom appears in a portion only of those who have tubercles, and not in others; and also why it appears in other cases where tubercles are not present. With regard to this we can only conjecture that there may be certain common influences which determine the appearance of this particular symptom in disturbed states of the system, although they have otherwise no essential feature in common.

Of general causes, those which naturally suggest themselves are changes of weather and the influence of heat and cold. The facts stated furnish at least a strong probability that the same influence of external temperature which induces a preponderance of thoracic diseases in the colder portions of the year, also tends to the production of hemoptysis. Yet this happens in a less degree, since the preponderance of other affections of the chest in the cold months, as compared with the warm, is decidedly greater than it is of hemoptysis.

Other conditions of the atmosphere that probably have an influence on health, are its degree of moisture, its electricity, and its pressure. Either of them may have an effect, but we have no sufficient data from which to form a satisfactory opinion. With regard to the latter, however, the pressure of the atmosphere, there is room for conjecture that a sudden change from a high to a low state of the barometer may be a determining cause of the appearance of this symptom in persons in some peculiar conditions: A spitting of blood has been a not uncommon phenomenon in persons ascending very high mountains, especially when the circulation has been excited by muscular exertion. Several patients have attributed their attack to walking, or running, or riding in a very high wind. Now a very high wind is usually preceded and attended by a fall in the barometer, which would in such a case be accompanied by an excited circulation. An eminent medical friend and a most accurate observer, Dr. James Jackson, has, I believe, remarked the same coincidence.

I subjoin a few cases in which hemoptysis has seemed to occur under circumstances partially illustrating these remarks.

Not long ago a young man, who regarded himself as in his usual health, after running half a mile against a strong wind, spit up a little blood, and, the next day, a quart.

Hemorrhage continued, with other pulmonary symptoms, and he died in about ten days. In this case the affection of the lungs as indicated by physical signs was quite general, and the course of it was like that of congestion of the lungs, or like pulmonary apoplexy, rather than of tubercular hemoptysis.—Another person, subject to slight attacks of hemoptysis, for several years, after riding 65 miles in an open sleigh, “in very cold weather and a high wind,” had, the next day, a very severe one. He was undoubtedly tubercular, and died in a few months afterward, but not directly from hemorrhage.

Other causes to which patients have, apparently with reason, directly attributed their attacks, are, great efforts in lifting or in singing, other great muscular exertions, and exposure to a close, warm atmosphere. A large gross man, aged about 30, after carrying a bag of coffee of 145 pounds up 55 stairs, became faint, pale, sick, vomited, and spit blood. The spitting continued occasionally for 12 or 14 hours. He was not tubercular, he recovered in a few days, and is well now, after an interval of 28 years.—A young man, aged 19, while bathing and swimming, had copious sudden hemoptysis, which continued several days. He had no previous symptoms, but cough came on in about three weeks, and he died of rapid phthisis.—A man about 30, was much heated and exhausted, by sitting long in a public assembly. He had no previous indisposition, but through the next day had very slight bloody sputa, so slight that I could hardly attach any considerable importance to them, especially as they were attended by no physical signs. Yet he was never afterward well, and died in eleven years, by a most gradual progress, of consumption, with intervals of great improvement, but passing no year during this period without one or more similar attacks.

Such is the very meagre account of the facts which have been gathered as to causes. They rather indicate the

points to which our inquiries are to be directed, than furnish any satisfactory result. We may perhaps draw from them this conclusion—that causes of this description sometimes produce hemoptysis in a perfectly healthy individual, but that for the most part they only determine its production in persons predisposed to disease, and who, except for the intervention of such a cause, might have gone on with their disease without this particular symptom.

But while we are thus uninformed as to the real causes which determine the occurrence of this symptom, there is no want of disposition on the part of patients themselves to find a sufficient account for every attack. The state of the stomach, and “being bilious,” are often referred to; but “taking cold” is that to which it is most commonly attributed. Now, although there is hardly anything in the causation of disease of which we know more than of the *general* influence of cold in this respect, there is, on the other hand, hardly anything of which we know less than of the laws and mode of its operation in *particular* cases. We know very well that the continued cold of winter produces a tendency to a certain class of diseases; but there is seldom an individual case of these diseases in which we can satisfy ourselves how, where, or when, the patient was exposed to those special operations of this cause which have developed it in the particular instance.

Very much the same line of remark may be followed in respect to the connexion of hemoptysis with the function of the uterus. It is common to speak of it as vicarious of menstruation. A truly vicarious menstruation—that is, where blood appears from the lungs instead of the natural flow from the womb, and from no other cause—I have hardly seen. Nearly all, if not all of cases called vicarious, where the subsequent history of the patient has been known, have proved to be tubercular in their essential character. Yet that the condition of the uterus has a decided influence in

the production of this symptom, I cannot doubt, nor of the intimate connexion which exists in many respects between the state of the lungs and that of this organ. The very general suspension of the catamenia as phthisis advances, sufficiently shows this, for it can hardly be attributed to the simple exhaustion of the system. It often takes place while the patient is still in comparatively good general health, while it does *not* as often take place in cases of similar exhaustion from other causes. It is quite common also for hemoptysis, in young females, to be preceded, accompanied, or followed, by disturbances of the catamenia. Hemoptysis will sometimes take place instead of them, or with them, or before them, or after them; but experience has strongly impressed upon me a melancholy foreboding in such cases, and it has too often proved to be well founded. That there are cases of vicarious hemorrhage from the lungs I cannot doubt, but the belief in its frequent occurrence, I greatly fear, is due to the readiness with which we yield ourselves to the most favorable explanation of unfavorable symptoms. The most exact expression of the fact in these cases I apprehend to be this, that hemoptysis does not often take place in such cases except in those who are predisposed to phthisis, and the disturbance in the function of the uterus rather determines a symptom than produces a disease.

In the diagnosis of hemoptysis there are two questions. The *first* is, does the blood come from the lungs? Concerning this, I have no particular remark to make. The rules of judgment are sufficiently and clearly known. A few cases present a doubt, but they are few and their progress usually clears it up. The *second*, and by far the most important question, relates to the essential character of the disease on which it is attendant. The blood, I suppose it is generally admitted, comes directly from the mucous membrane of the lungs, except in those few cases where there is the rupture of a large vessel in the last stages of phthisis, or of an

aneurism. But in all others the momentous inquiry is,—Is the case simply one of bronchial hemorrhage, or is there anything behind it? Are there tubercles—is there congestion, or pulmonary apoplexy—is there disease of the heart—is there pneumonia? A careful investigation of the condition of the patient, and especially of the physical signs, will generally enable us to determine with regard to the four last, but hemoptysis often occurs in connexion with tubercular disease without any physical sign of their existence, and it is only the subsequent history of the patient which places it beyond doubt.

In such a case a tolerable judgment can often be formed by reference to various incidental circumstances. The hemorrhage is sometimes found to have been preceded by a failure of the general health—by dyspeptic symptoms—by a loss of flesh and strength—by shortness of breath—palpitations—pains about the chest and sides—and cough. In this state of things there is great reason to fear that the patient has tubercles. Perhaps no condition is more ominous than where the hemorrhage, however small, has been preceded by a marked wasting of the body, with loss of strength, and by a cough, even so slight as to have been hardly noticed. This condition may exist when the appetite and digestion have remained good.

But though we can thus often make an *unfavorable* diagnosis, it is much less easy to make a *favorable* one. Blood may make its appearance suddenly in those who have been in perfect health up to the moment of the attack. In such there is always reason to hope that it may be simply bronchial; but on the other hand it often happens, especially in young persons, that phthisis is developed with great rapidity, and goes on to its termination in a short time. In others, there may be no cough—except that occasioned by the flow of blood—and complete recovery may appear to take place. Yet after an interval of health of a few weeks

or months, there will be a recurrence of hemoptysis; or, without this, symptoms of phthisis will manifest themselves, and go on to the destruction of the patient. Such cases as these last, however, are more likely to assume the protracted form, and this is especially so where there are occasional returns of bleeding.

There are no early means of distinguishing these cases from those in which recovery is to take place. Indeed, as already intimated, we have reason to believe that many of those which we enumerate as recoveries are actually dependent upon the presence of tubercles; but that these are arrested in their progress and remain quiescent during the remainder of the patient's life.

Among the most favorable circumstances attending an attack of hemoptysis, are all those upon which we can put the construction that they indicate the restriction of the disease to the mucous membrane of the air-passages; that the attack is in fact analogous to the frequent hemorrhages which proceed from the same membrane in the nose, the rectum and the uterus. This, it is to be presumed, is its character in those who permanently recover. We may reasonably hope that this is so where the flow of blood has been preceded by symptoms manifestly catarrhal of the head, throat or lungs—or even where it has been followed by them; or where, after its subsidence, a cough follows, accompanied by an expectoration resembling, in its appearance, in the changes it undergoes, and the manner in which it subsides, the state of things which presents itself in a case of common bronchitis.

Prognosis in hemoptysis is so intimately connected with, in fact is so entirely dependent upon, diagnosis, that the above remarks imply nearly all the considerations relative to it. We may briefly recapitulate the most important points in the following statement:—

1. That there is rarely any immediate danger from an

attack of hemoptysis, especially the first, except when there is some general affection of the lungs of a congestive or inflammatory character, attended by much embarrassment of breathing and other grave symptoms, and that the danger in such cases does not depend upon the amount of hemorrhage.

2. That of all cases of hemoptysis, so far as we draw our judgment from those which have been now examined, less than two-thirds end in phthisis; consequently that, in all those unaccompanied by distinct indications of the presence of tubercles, there may be held out to the patient a reasonable prospect of recovery, or, at least, of a disease that will be gradual in its progress.

3. That the most favorable cases, as to complete recovery and future immunity, are those preceded or accompanied by catarrhal symptoms.

4. That no patient who has once had hemoptysis, however slight, can ever afterward be regarded as entirely secure from the development of tubercular disease.

5.—That those cases of phthisis which are ushered in or accompanied by hemorrhage, especially if it be copious, are more likely than others to be protracted, and more capable of being prolonged and rendered comfortable by suitable treatment.

6.—That hemorrhages occurring in the later stages of phthisis in large quantity and of continued duration, are liable to be either speedily fatal from their quantity, or to prove so after a short period from the embarrassment to the function of the lungs which accompanies them—but that such cases are of rare occurrence.

It is no part of the plan of this paper to enter into a detailed consideration of the treatment of hemoptysis. I shall confine myself to some general statements, partly the deductions from general experience, and partly the result of a particular review of the cases which are before us.

It is to be recollected that the appearance of this symptom usually creates great alarm, and that the anxiety of the patient is for the most part directed to it as an immediate source of danger. The solicitude is great that it should be arrested. The physician cannot help sharing in this solicitude. The question is, whether it be practicable, and whether it be desirable.

In a majority of patients, we cannot at once determine the essential character of the case, and we are obliged to govern our practice by the intensity of the hemorrhage and by the symptoms that accompany it. Where these are of a grave description—such as a very disturbed state of the circulation—difficult and oppressed respiration—embarrassed action of the heart—severe and suffocative cough, and physical signs—especially a crepitous râle, extensively diffused over the chest—there is no remedy which has seemed to me so decided in its power of giving relief as venesection. Beside this, we may have recourse to the common measures employed in acute diseases—rest, careful management of diet, antimonials, diaphoretics, &c. Blisters appear to have very little good effect, nor do the astringent remedies commonly employed seem to be of any avail. Cold water applied to the chest by means of a large compress, which is then covered by several folds of flannel, and the frequent use of warm fomentations, or of mustard baths to the lower extremities, have appeared much more effectual.

Such cases, however, constitute but a small proportion of those we encounter, and commonly, I have no doubt, the flow of blood may be safely left to that tendency to its own limitation which probably exists in all cases.

It cannot be too constantly kept in view, and impressed, so far as it can be, upon the sick, that the danger is not from the hemorrhage, but from that of which the hemorrhage may be a sign. It may even be a question whether the sudden arrest of the hemorrhage may not increase the

chance of a subsequent development—not a production—of tubercular disease. That this may be sometimes so, is rendered not improbable by the fact, in protracted phthisis, that the symptoms are occasionally singularly mitigated after an attack of bleeding. This result, however, is not uniform, for the opposite may take place. We cannot, then, rely upon it as a principle of universal application.

The remedies commonly employed are astringents, both vegetable and mineral, the mineral and vegetable acids, and opiates, generally combined with ipecacuanha or antimony.

These articles have been extensively used in the cases under consideration, but I have been led to entertain great doubts whether they have exercised any considerable control over the flow of blood. This usually ceases at a period varying from a few hours to seven or eight days, sometimes longer; but I have not perceived that there was any difference in this respect according as one or the other of them was employed, or the case left mainly to take its own course. To this remark there is perhaps an exception in regard to opium, which, either by checking the cough, or by a direct anti-hemorrhagic operation, has certainly appeared to have some absolute influence. At any rate, where the cough is urgent and irritating, where there is much pain, or where there is need of its effect to give ease and sleep, or to correct any other symptom, its administration has often appeared salutary. Its combination with ipecac, antimony or an alkali, will diminish some of its unpleasant effects and perhaps increase some of its beneficial. Of the other remedies, there has appeared to be more evidence for the efficacy of gallic acid as a check to hemorrhage, than any other astringent, but it requires to be given in liberal doses—ten grains, for example, once in three or four hours.

For the mere purpose of restraining hemorrhage, where the necessity of this is judged to be great, venesection, although not required for the safety of the patient, as in the

form of the disease just referred to, will usually check or at least mitigate it. This is also true of vomiting, a measure to which some practitioners have attributed a decided efficacy, an opinion to which, though from a very limited observation, I am inclined to subscribe. There is a common impression that the powerful commotion excited by the act of vomiting may increase the flow of blood. There seems to be no foundation for this apprehension. Spontaneous vomiting is not an unfrequent occurrence, especially where blood has been swallowed, as it frequently is where its discharge is very copious, but this has not seemed to increase it.

By far the most important point in the therapeutics of the cases under consideration, is the management of those of "protracted phthisis" in which hemoptysis is a prominent symptom. Yet in these the hemoptysis is not the symptom particularly to be regarded in the treatment. Its presence is favorable as regards the duration of the disease, but it does not call for any material variation from the course to be pursued in ordinary cases, in which the principal object is to promote the comfort of the patient, and to retard the progress of his disease. Upon the means most likely to secure this result, the profession are now pretty generally agreed. Although there has been formerly a great difference of opinion concerning them, there is hardly any therapeutic point on which there is now a greater unanimity.

I shall therefore only briefly refer to those that appear most important. Among the most essential of these is a constant, active, out-of-door life; a life with as much muscular exercise as the strength will admit. This it is difficult to ensure in our climate. The best means of obviating the obstacles to it in the colder seasons are found in the use of the respirator, and by wearing a suit of deer-skin leather over a suit of flannel. With these measures of protection

there are few days in any part of the year in which a patient may not go abroad.

To those whose circumstances permit, passing the colder portions of the year, say from the middle or end of November to the middle of June, in a southern or southwestern climate, is preferable.

Another important measure is riding constantly on horseback; or what is better, if practicable, long journeys on horseback. Some patients apprehend that so violent an exercise will be likely to induce an attack of bleeding. This certainly has happened. But more frequently it has seemed rather to diminish the tendency to it. At all events, however, the advantages of the exercise are so great, and the occasional return of hemorrhage is a thing of really so little consequence as to the progress of the disease, that the patient may be safely recommended to persevere and disregard it.

The best results have in some instances followed taking very long voyages; for example, to the East Indies, to China, or to the Pacific. But the place of destination is not of great importance—the essential condition is that the patient should be a long time at sea, where the temperature is mild and equable.

The fundamental principle in the management of the diet is, that it should be always as nutritious as the case will admit; never by set purpose abstemious—abstemious only on account of some necessary condition of the digestive organs. There is an advantage in occasional changes in its general character—as from that which is stimulating to that which is not—from a diet of beef and mutton, for example, to one of milk, fruit and vegetables. These variations can be sometimes made in accordance with some general principle of dietetics; but for the most part the tendencies of each individual are to be consulted. The instinct of the stomach, if fairly understood and consulted, is a better

guide to its management than any rules of science. Sufficient variation is the important consideration; for the digestive organs are as apt to flag under a monotony of diet, as the mental under one of employment.

The use of stimulating liquids is a matter of considerable delicacy in its arrangement. There is the best evidence that they are of signal efficacy at some periods of almost every case; and yet there are few in which their occasional intermission is not required. The interesting and important fact, first noticed I believe by Dr. John Jackson, of the comparative infrequency of tubercular disease in persons addicted to the excessive use of spirituous liquors, seems to illustrate though not to explain their efficacy. Of these articles, whiskey, wine and malt liquors have seemed the most efficacious, and brandy the least.

Of the proper medical treatment of protracted phthisis, the use of iron—of various other tonics—of opiates and other anodynes, I do not propose to speak. The degree and amount of their efficacy, the states of disease in which they are called for, and the principles upon which they are to be employed, have been fixed by long experience. But there are some additional means more recently introduced into medical practice, concerning which a few remarks may not be inappropriate.

Of these, cod-liver oil stands before all others. While there is great doubt whether phthisis were ever cured, in the proper sense of the word, by its use, there is as little that it has often been the means of prolonging life, rendering it comfortable, and retarding the progress of disease. There are few cases in which its employment for a long time and an occasional return to its use, when it has been suspended, are not found of advantage.

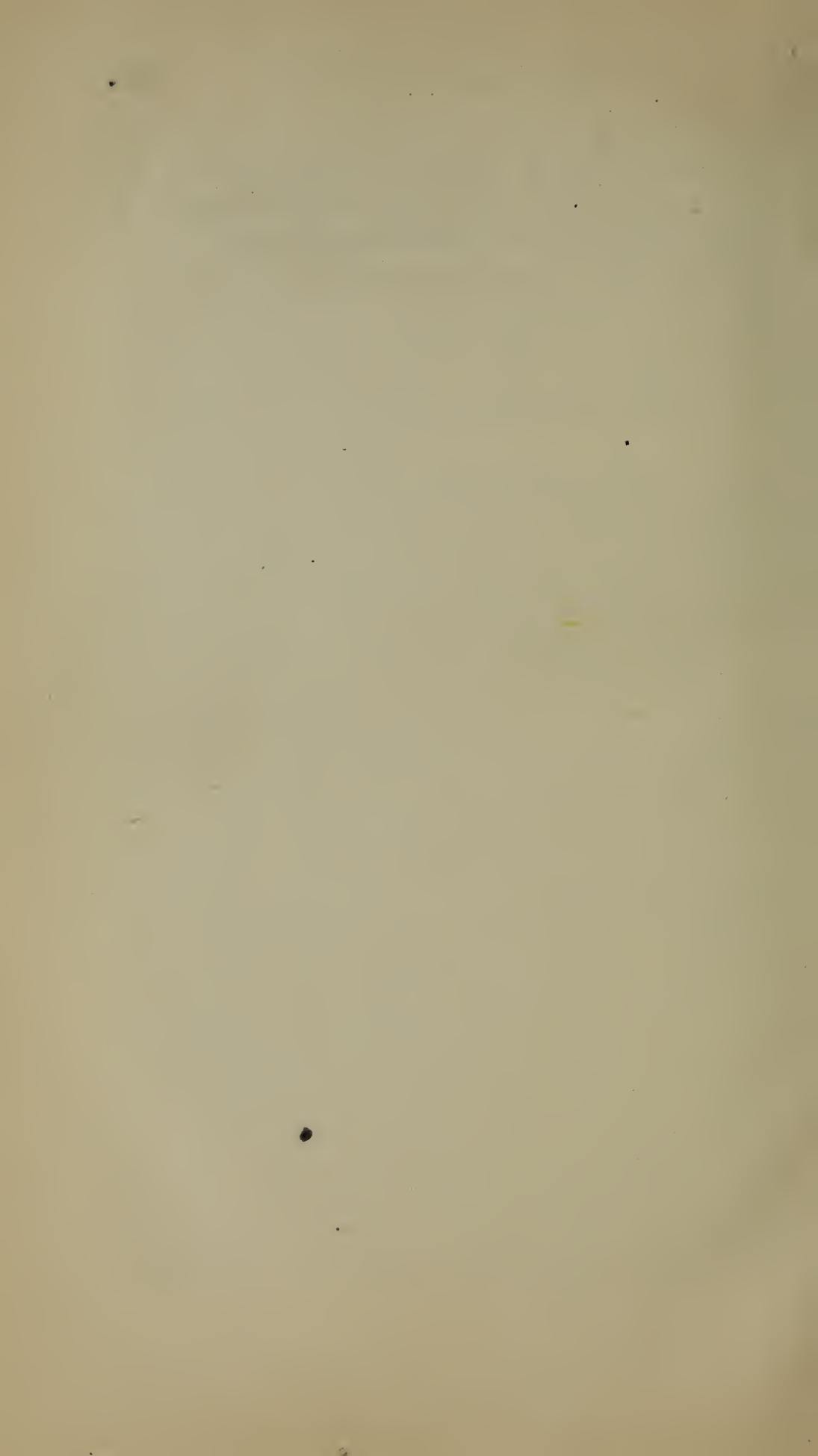
Fusel oil, the employment of which was, I believe, first suggested by Dr. Wyman, of Cambridge, is also an article of considerable value, though by no means to the same ex-

tent as that last mentioned. Its efficacy, so far as I have been able to judge, depends mainly upon a power of mitigating that morbid condition of the mucous membrane of the trachea and lungs which usually accompanies phthisis, thus diminishing the cough and restlessness and promoting sleep. It appears also to have occasionally a similar favorable effect upon a corresponding state of the same membrane in the alimentary canal. In this way, indirectly, it has seemed to improve, very considerably, the general condition of many patients.

Wood naphtha was some years ago proposed as a remedy holding out great advantages in the treatment of phthisis. As usual, though it has probably come up to the expectations of practical physicians, it has certainly failed to fulfil the promises with which it was introduced to the profession. Still its continued use has in many cases been beneficial in the mitigation of symptoms; and its influence seems not unlike that exercised by fusel oil.

Latterly, the hypophosphites of soda and lime have been ushered into notice with very much the same kind and amount of testimony in their favor. They have been in use too short a time to furnish materials for forming a definitive judgment on their claims. It would be premature, therefore, to pronounce one. Those who have been practically acquainted with phthisis will probably not be sanguine in their anticipations. Should it prove, however, that they add anything to our means of alleviating the sufferings or prolonging in comfort the lives of the subjects of this insatiable disease, we are to welcome them gladly. It is fortunate, both for patients and physicians, that there are those among us who hope against experience; and expect against disappointment. It is to these sanguine, and it may well be added, happy natures, that we owe many great improvements in the practice of medicine. Fortunate is the patient whose physician can always find something to hope. Fortunate is

the physician himself; for surely nothing can so much serve to cheer him under the painful duty, of attendance on this dreadful disease, as to be able honestly and sincerely to hold to his patients the cordial language of hope.



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